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ABSTRACT

Methods of the 1976-77 Expanded Eligibility Survey, which was conducted for the University of California at Berkeley and the University of California System, are described. The survey was undertaken as a supplement to the 1976 High School Eligibility Study. A subsample of the 1976 Eligibility Study graduates was mailed questionnaires to determine the graduates' ethnicity, family income, parental education, colleges applied to, colleges attended, and post-graduation employment. The influence of family, friends, high school counselors, and visiting recruiters on career choice, decisions to attend college, and college selection were also assessed. This report describes the sampling, field work, and weighting methods of the 1976-77 Expanded Eligibility Survey. Recommendations for major changes in the design of future surveys are offered. (SW)

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SURVEY METHODS
OF
THE 1976-77 EXPANDED ELIGIBILITY SURVEY

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May 1, 1978

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INTRODUCTION

This report describes the methods of the 1976-77 Expanded Eligibility Survey conducted by the Survey Research Center of the University of California at Berkeley and West Coast Community Surveys for the Office of Outreach Services of the University of California Systemwide Administration. This survey was undertaken as a supplement to the 1976 High School Eligibility Study conducted by the California Postsecondary Education Commission in cooperation with the University of California and the California State University and Colleges.

Under the 1960 California Master Plan for Higher Education, "the University of California is urged to draw its first-time freshman class from the top 12-1/2 percent of the high school graduating class and the California State University and Colleges is urged to draw from the top 33-1/3 percent."* To ascertain how well these goals were being met, the 1976 High School Eligibility Study selected a sample of approximately 10,000 1974-75 California public high graduates. Copies of the graduates' high school transcripts and scores from standardized college aptitude tests were requested from their high schools and submitted to independent eligibility review by the admissions staff of the University of California and of the California State University and Colleges. A summary report, prepared by the California Postsecondary Education Commission, found 14.84 percent of the sample eligible for the University of California and 34.96 eligible for the California State University

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*California Postsecondary Education Commission, 1976 High School Eligibility Study, (Sacramento; California Postsecondary Education Commission, December 13, 1976), p. i.

and Colleges.** Since both segments of the State's higher education system somewhat exceeded their Master Plan goals, the CPEC report recommended a recalibration of both the UC and CSUC admissions standards.

The objectives of the 1976 High School Eligibility Study were limited to estimating the UC and CSUC eligibility rates among California public high school graduates. It collected no information about the graduates' ethnic or social backgrounds nor their post-graduation activities. In anticipation that such broader information would aid in assessing the social impact of current and proposed admission standards and in informing the direction of University affirmative action policies, the Office of Outreach Services of the University of California Systemwide Administration commissioned the 1976-77 Expanded Eligibility Survey. A subsample of the 1976 Eligibility Study graduates was mailed questionnaires to determine the graduates' ethnicity, family income, parental education, colleges applied to, colleges attended, and post-graduation employment. The survey also afforded an opportunity to explore the influence of family, friends, high school counselors, and visiting recruiters in career choice, decisions to attend college, and college selection.

This report describes the sampling, field work, and weighting methods of the 1976-77 Expanded Eligibility Survey. Since the authors believe that the survey was only partially successful in meeting its objectives, they have included recommendations for major changes in the design of future surveys undertaken for these purposes. Nor have they hesitated to point to unanticipated deficiencies in the present design and in the 1976 High School Eligibility Study upon which it was based. The substantive results

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** Ibid., p. 4.

of the Expanded Eligibility are not provided in this report. First substantive results are separately presented in Beyond High School Graduation: Who Goes to College? prepared by the Office of Outreach Services of the University of California Systemwide Administration.

This report is divided into three main sections. The first provides a brief summary of methods and recommendations intended for executive review. The second presents a more complete overview of methods, problems, and recommendations for interested readers. The third consists of a series of technical appendices documenting the sampling, field work, and weighting methods in detail.

Organizational Division of Labor

Three organizations participated in the design, field work, and analysis of the Expanded Eligibility Survey.

The Office of Outreach Services of the University of California Systemwide Administration both commissioned the survey and devoted hundreds of staff hours to its completion.* This Office took responsibility for development of the name and address file of high school graduates and for maintaining liaison with the California Postsecondary Education Commission and other participants in the 1976 High School Eligibility Study. Kati Haycock and Carnegie Ouye of this Office also participated in all major decisions on the sampling, field work, and processing for the study and have prepared the first report of results.

The Survey Research Center of the University of California at Berkeley joined the planning for the survey shortly after coordination with the 1976 Eligibility Study was established. The Center also assumed responsibility for all sampling and data processing steps, and completed the major portion

*The Office of Outreach Services was formally the Student Affirmative Action Office of the University Vice President for University and Student Relations.

of the field work. Although the Center was originally scheduled to design the questionnaire and conduct the pilot survey, delays in completion of the CPEC Eligibility Study postponed these activities to a period when the Center's staff was committed to other activities.

West Coast Community Surveys undertook these tasks, including the development and pretesting of the questionnaire, development of the field work design, mailings to a pilot sample of approximately 1,000 graduates, and testing of alternative forms of nonrespondent followup. Although the remainder of the field work was completed by the Survey Research Center, continuity of procedures was maintained by close coordination of all three organizations and through continuity of key staff. Selma Monsky, President of West Coast Community Surveys, joined the Survey Research Center as Manager of Field Operations during the course of the study.

This report describes the survey methods employed both by the Survey Research Center and West Coast Community Surveys.

CONTENTS

		Page
Introduction		i
	I. Summary of Methods and Recommendations	
1.	Summary of Methods	2
2.	Summary of Recommendations	4
	II. Methods, Problems, and Recommendations	
1.	Graduates Surveyed	8
2.	Obtaining Names and Addresses	9
3.	The Pilot Survey	14
4.	Subsampling Plan	16
5.	Field Work of the Main Survey	22
6.	Field Outcomes	25
7.	Weighting	28
8.	Eligibility and Ethnicity	31
9.	Cautions in the Use and Interpretation of the Expanded Eligibility Survey	33
10.	Recommendation for Future Expanded Eligibility Surveys	36
11.	A Note on Sample Size	43
	Footnotes	48
	Appendices	
A.	Sampling Methods	A-1
B.	Followup Methods and Their Results	B-1
C.	Weighting Methods	C-1
D.	Preparing Estimates of Eligibility by Ethnicity	D-1
E.	Questionnaire	

PART I

SUMMARY OF METHODS & RECOMMENDATIONS

SUMMARY OF METHODS AND RECOMMENDATIONS

Summary of Methods

1. The sample of the 1976 High School Eligibility Study consisted of 10,233 persons who graduated from California public high schools between June 1, 1974 and June 30, 1975. High school transcripts and college aptitude test scores (when taken) were obtained for 9,965 graduates or 97.6 percent of the original sample.

2. The 1976-77 Expanded Eligibility Survey selected its sample from these 9,965 graduates whose UC and CSUC eligibility was assumed to be known from the High School Eligibility Study. However, approximately 13 percent of these graduates could not be included in the Expanded Eligibility Survey due to limitations in the design and processing of the High School Eligibility Study and the reluctance of some high schools to supply the names and addresses of sampled graduates. An additional 1.8 percent were excluded from the survey because they had died or permanently left California before the questionnaires were mailed or denied in response to the survey that they had graduated from high school between the required dates.

3. Questionnaires were mailed to 6,115 graduates. The mailing sample included: (a) all available UC eligible graduates; (b) all available CSUC eligible graduates; (c) and all graduates ineligible for both institutions who attended a high school with a 40 percent or more non-Asian minority enrollment. A 44.5 percent subsample also was included of all remaining ineligible graduates, those who had not attended a minority high school.

4. Questionnaire mailings were undertaken in two waves: (a) a pilot survey of 968 graduates in the fall of 1976; and (b) the main survey of 5,147 graduates beginning in the winter of 1977. Each wave employed multiple mailings to nonrespondents and attempted to locate graduates no longer residing at their last known address. Follow-up efforts continued through the summer of 1977.

5. Completed questionnaires were received from 4,131 graduates. These constituted about two-thirds of the mailing sample after graduates who had died or moved from California and those denying they had graduated between the required dates were excluded. Return rates were much higher for UC eligible graduates (86.2 percent) and other CSUC eligible graduates (76.3 percent) than for minority high school ineligibles (50.4 percent) and other ineligibles (58.3 percent).

6. Return rates undoubtedly would have been higher if questionnaire mailing could have begun sooner. Due to delays in the High School Eligibility Study, first questionnaires reached June 1975 graduates about 16 months after they had graduated and summer 1974 graduates about 27-30 months after they left high school. By this point, many graduates no longer resided at the same address and were unlocatable. Almost a fifth of the minority high school ineligibles were unlocatable, contributing to the low return rate for this group.

7. The survey results have been case-weighted for: the subsampling of non-minority high school ineligibles, the varying return rates by eligibility status, type of high school among ineligibles, sex, and grade point average. The results also have been ratio-adjusted to reproduce the UC and CSUC eligibility rates of the CPEC 1976 High School Eligibility Study for the state as a whole and each of six geographic regions of California.

8. Weighting cannot fully compensate for nonresponse losses. Since much higher return rates were obtained for eligible than for ineligible graduates, the Expanded Eligibility Survey provides more trustworthy descriptions of the UC and CSUC eligibility pools than of ineligible graduates or all graduates combined. For example, when weighted results for all graduates are compared with 1973 seniors in the California Department of Education's Racial Census, the Expanded Eligibility Survey appears to underrepresent Black graduates, especially Black males.

9. To estimate UC and CSUC eligibility rates for major ethnic groups, weighted results of the Expanded Eligibility Survey were further adjusted for the apparent ethnicity of nonrespondents determined from surnames and projections from response trends. Based on these sources, UC eligibility rates appear to range from 4.8 percent of Chicano, Latino, and Filipino public high school graduates to 39.0 percent of Asian-American graduates. CSUC eligibility rates range from 13.4 percent of Black graduates to 61.0 percent of Asian-American graduates.

Summary of Recommendations

The following recommendations represent the opinions of the authors of this report and may not reflect the views of the University of California Office of Outreach Services to whom this report is addressed.

1. Future expanded eligibility surveys should be more closely coordinated with future high school eligibility studies. If appropriate fiscal and organizational arrangements can be made, the two studies should be conducted by an integrated staff with demonstrated professional experience in survey sampling, questionnaire design, field administration, and data processing for large-scale surveys.

2. This combined staff would most appropriately be located within, or report to, the California Postsecondary Education Commission. If located within the California Postsecondary Education Commission, the CPEC staff should be expanded to include at least one full-time person with professional experience in the design and administration of large-scale surveys.

3. Future expanded eligibility surveys would be greatly facilitated if future high school eligibility studies: (a) adopted centralized sampling of graduates rather than delegating sampling tasks to the high schools; (b) maintained a computerized central roster of sampled graduates including names, high school attended, and a unique identification number; (c) employed quality control procedures for keypunching and other processing steps; and (d) required a reconciliation of all records, including the UC and CSUC eligibility reviews, with the central roster. These steps also should contribute to greater reliability of estimated UC and CSUC eligibility rates.

4. If fiscal, staffing, or time constraints preclude the modifications in future high school eligibility studies outlined above, it is recommended that future expanded eligibility surveys not be attempted.

5. Since some high schools were reluctant to participate in the 1976 High School Eligibility Study and the 1976-77 Expanded Eligibility Study on the grounds that this might violate the Privacy Act, the legal status of both studies should be thoroughly reviewed well in advance of their field work. If necessary, appropriate legislation or legislative resolutions should be requested clarifying the legal status of the surveys and encouraging participation. Written documentation covering these points should be transmitted or offered to sampled high schools in initial communications.

6. If mailed questionnaires are to be used for future expanded eligibility surveys, additional identifying information should be requested for each sampled graduate to facilitate tracing and weighting. This should include: (a) name; (b) current address; (c) sex; (d) exact birthdate; (d) parent or guardian's name; (e) telephone number; and (f) if possible, ethnicity.

7. If mailed questionnaires are to be used for future expanded eligibility surveys, first mailings to June graduates should begin no later than four months following their graduation so that most will be locatable through their graduation addresses and the questions will be pertinent to greater numbers. This would require major changes in the time schedule and methods of the accompanying high school eligibility study as described in Section 10 of the main body of the report.

8. If first mailings to June graduates must be delayed more than four months after their graduation, the field work of the expanded eligibility survey should focus exclusively on UC and CSUC eligible graduates and no attempt should be made to identify the characteristics of ineligible graduates through questionnaires. This would permit an ethnic and social description of the UC and CSUC eligibility pools but would not provide estimated UC and CSUC eligibility rates by ethnicity or other social characteristics.

PART II

METHODS, PROBLEMS, & RECOMMENDATIONS

1. Graduates Surveyed

The study population of the 1976-77 Expanded Eligibility Survey closely paralleled that of the California Postsecondary Education Commission's 1976 High School Eligibility Study. For brevity, these two studies will be referred to, respectively, as the Expanded Eligibility Survey and the CPEC Eligibility Study.

The population of the CPEC Eligibility Study consisted of all persons who graduated from California public high schools (including adult, continuation, and evening high schools) between July 1, 1974 and June 30, 1975.[1] Persons who received a high school diploma from a California community college or a General Equivalency Diploma (GED) between these dates also were included in the population. The final adjusted sample of the CPEC Eligibility Study, as reported by the California Postsecondary Education Commission, consisted of 10,233 persons meeting these criteria. They comprised an estimated 3.5 percent of the population. High school transcripts and admissions test scores (when taken) were obtained for 9,965 persons, or 97.6 percent of the final adjusted sample.[2]

The Expanded Eligibility Survey further restricted the study population in two additional ways. First, it omitted persons who had died or permanently moved from California before the questionnaires were received. Those leaving the state were omitted primarily for field work convenience, since the tracing of such persons would have proved extremely difficult and costly. In total, about 1.0 percent of the original sample were deleted by these criteria. They included graduates who had joined the Armed Forces and were

stationed overseas or in another state. Graduates who maintained a California residence while attending a foreign or out-of-state college or university were retained in the survey.

Second, the Expanded Eligibility Survey provided an additional opportunity to check on the dates of graduation. Persons included in the CPEC Eligibility Study who denied in the questionnaires or in telephone followup interviews that they had graduated from high school between July 1, 1974 and June 30, 1975 were excluded from the study population. They comprised 0.8 percent of the original sample who could be reached.

2. Obtaining Names and Addresses

Graduates' names and addresses were obtained for the Expanded Eligibility Survey as an independent supplement to the sampling procedures of the CPEC Eligibility Study. Since these sampling procedures presented subsequent difficulties for the Expanded Eligibility Survey, they will be briefly reviewed.

Commonly, a survey such as the CPEC Eligibility Study would begin by requesting a list of all persons graduating between the specified dates from each public high school in the state. A sample would then be drawn from the combined list, and each sampled graduate would be given a unique identification number to which the name, transcript, and other records could be related. The master roster of sample graduates could then serve to link all data tapes produced by the study and insure their completeness.

In lieu of these procedures, the CPEC Eligibility Study began with a listing of public high schools and approximate estimates of the number of graduates in each. The CPEC staff then estimated the total number of

graduates in the state, say N, and obtained a set of 10,000 nonrepeating random numbers between 1 and N. The high schools were then arranged in alphabetical order and the random number applied to their estimated numbers of graduates to represent the graduates to be selected.

To illustrate the process, suppose the first three high schools on the alphabetical list were estimated to have 100, 4, and 116 graduates, respectively, and the first eight random numbers were 12, 40, 65, 98, 110, 157, 179, and 205. The CPEC method would select the 12th, 40th, 65th, and 98th graduate from the first high school, no graduates from the second high school, and the 6th, 53rd, 75th, and 101st graduate from the third. Unfortunately, both the initial listing of high schools and the estimated numbers of graduates proved to be faulty, requiring many adjustments to the sample after the initial selections were made.[3]

The CPEC staff next constructed a ten-digit identification number for each graduate to be selected. This consisted of the high school's two-digit county code, the last four digits of the high school's ZIP code, and a four-digit graduate number. Thus, if the third high school on the list was in county 01 and ZIP code 93214, the identification numbers for its sampled graduates would be 01-3214-0006, 01-3214-0053, 01-3214-0075, and 01-3214-0101. In constructing the identification number, it was not recognized that more than one high school could exist in the same ZIP code area. Thus, the high school code was not unique, and more than one graduate could have the same identification number.

The Commission then mailed a letter to each high school from which graduates were to be selected enclosing the identification numbers of graduates to be chosen from that school. The high school was requested to prepare

a list of all its 1974-75 graduates in any convenient order, number these graduates in serial order, and select for the sample those whose serial number matched the last four digits of the supplied identification numbers. Thus, the actual selection of graduates was delegated to the staff of each high school rather than performed by a centralized staff.

The Commission's letter then asked the high school to prepare a copy of each sampled graduate's high school transcript from which all personally identifying information, such as the graduate's name, address, and birthdate, had been removed. Transcripts were to be identified only by the CPEC supplied identification number. Copies of the graduate's SAT, ACT, and CEEB test scores, if any, also were to be transmitted in a form which identified the graduate only by his or her identification number.

At the same time, the high school was asked to supply the graduate's name and address for the Expanded Eligibility Survey on a separate form containing only the identification number, name, and address for each. In most cases, the last known address was the one at the time of graduation. Thus, the only link between the graduate's transcript and name and address was the CPEC suppled identification number. Since the sampling and transcription tasks were performed by the staffs of more than 900 different high schools rather than a closely supervised central staff, there were numerous opportunities for undetected errors.

Figure 1 summarizes the records flow of the CPEC Eligibility Study and the Expanded Eligibility Survey. The Commission requested the high school to forward the names and addresses of sampled graduates to the staff of the Expanded Eligibility Survey, while copies of the transcripts and test scores were sent to CPEC. Two copies of each transcript and test

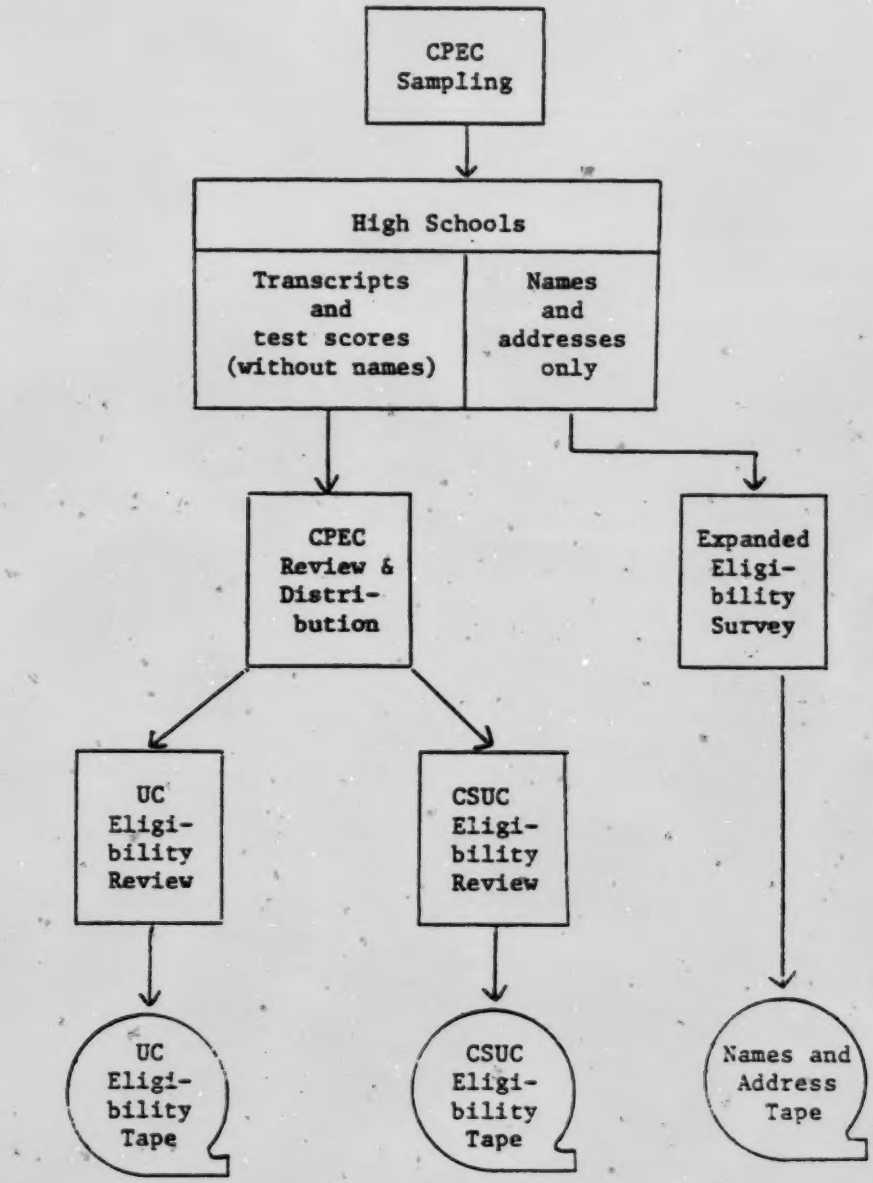
scores were then prepared by CPEC, one for eligibility review by the University of California and another for eligibility review by the California State University and Colleges. The process was complicated by the many revisions of the sample, which necessitated the deletion of some graduates after their records were distributed and their replacement by other graduates, sometimes with the same identification numbers.

Each segment (UC and CSUC) performing the eligibility review then independently prepared a machine readable data file summarizing information from the transcripts and test scores pertinent to its admissions criteria. The resulting UC and CSUC Eligibility Tapes were not reconciled with each other in estimating the UC and CSUC eligibility rates. Instead, the CPEC staff estimated the UC eligibility rate from the UC Eligibility Tape and the CSUC eligibility rate from the CSUC Eligibility Tape.

Not all high schools supplying transcripts and test scores for the CPEC Eligibility Study agreed to provide the University with the names and addresses of their sampled graduates for the Expanded Eligibility Survey. While CPEC reports a final adjusted sample of 9,967 transcripts, names and addresses were received only for 9,456 graduates. This suggests that names and addresses were not supplied for about 500 graduates, or roughly 5.1 percent of the CPEC sample. However, without a centrally maintained master sample listing, the actual losses cannot be determined. As explained in Section 4, a case-by-case matching identified major discrepancies among all three tapes. Actual losses to the Expanded Eligibility Survey from failures to supply names and addresses may have been either greater or smaller than indicated by the gross comparison of total figures.

Figure 1

OVERVIEW OF RECORDS FLOW FOR THE 1976 ELIGIBILITY AND EXPANDED ELIGIBILITY SURVEYS



3. The Pilot Survey

First questionnaire mailings for the Expanded Eligibility Survey were originally scheduled for the spring of 1976 to reach June 1975 graduates about a year after they had left high school. However, the CPEC solicitation of transcripts, names, and addresses from reluctant high schools continued into the fall and was not terminated until November 1, 1976.

By the summer of 1976, it was apparent that first mailing to the full sample could not begin until the late fall of 1976 or the winter of 1977. By that point, it was uncertain how well the graduates would respond to a questionnaire focused on decisions made at the time of high school graduation. June 1975 graduates would have completed high school at least 16 months previously, while summer 1974 graduates had been out of high school for more than two years. In addition, many graduates would have moved from their last known address in this interval and could have become untraceable.

Rather than commit substantial resources to a possibly unsuccessful survey effort, the decision was made to begin with a pilot survey of about 1,000 graduates chosen from the pool of names and addresses already received. A questionnaire was developed by West Coast Community Surveys intended to cover topics of interest both to graduates attending college and to those choosing other career lines, since a response was desired from both. The questionnaire was carefully pretested with both types of graduates, including young persons seeking employment through local offices of the Employment Development Department. The questions and instructions were modified to be comprehensible to both. A copy of the final questionnaire is provided in Appendix E.

The first mailing to the pilot sample of 968 graduates on October 1, 1976, consisted of a copy of the questionnaire, an appeal letter, and a return envelope with stamps attached. Those who did not reply in three weeks were sent a reminder letter, and those who had not replied within another two weeks were sent a second copy of the questionnaire, a stronger appeal letter, and another return envelope with stamps attached. All mailings were labeled "Address Correction Requested" to obtain new addresses for those who had moved if known to the Post Office or to the recipient.

Graduates who did not respond to the first three mailings were divided into four groups to test the effectiveness of alternative methods of further followup: (1) a fourth mailing by certified mail; (2) a fourth mailing by special delivery; (3) tracing of new addresses by voter's registration; and (4) location of respondents by use of reverse telephone directories. These four methods and their results are more fully described in Appendix B. In general, it was learned that certified mail was the most effective of these four techniques for this study.

In total, questionnaires were received from 639 graduates or 67.5 percent of the pilot sample excluding 33 defined out of the population by the criteria described in Section 1. While a higher return rate would have been desirable, the results appeared sufficiently promising to undertake mailings to a larger sample.

4. Subsampling Plan

Rather than mail questionnaires to all remaining graduates in the CPEC Eligibility Study, the decision was made to focus remaining resources on three groups of special interest and to subsample the remainder. In this way, resources could be devoted to greater followup efforts for a reduced sample.

The three groups chosen for special emphasis were: (1) graduates eligible for the University of California; (2) remaining graduates eligible for the California State University and Colleges; and (3) graduates eligible for neither, who attended a "minority" high school as defined below. All available graduates in the CPEC Eligibility Study meeting these criteria and not already chosen for the pilot survey were included in the main Expanded Eligibility Survey. In addition, three-eighths of the remaining graduates (those ineligible for UC or CSUC and not attending a "minority" high school) were subsampled for inclusion in the mailings.

"Minority" high schools were defined as those in which minority group students, other than Asian-Americans, comprised at least 40 percent of the student body in the 1973 Racial Census conducted by the California Department of Education.[4] Asian-American students were not regarded as minorities for this purpose since they were known to have UC and CSUC eligibility rates at least equal to those of nonminority graduates.

In preparation for the subsampling plan, the UC and CSUC Eligibility Tapes were merged with the name and address file. This process identified a variety of inconsistencies among the tapes which further limited the number of graduates for whom sufficient information was available to permit their inclusion in the Expanded Eligibility Survey.

As shown in Table 1, the three tapes differed in their numbers of records (graduates), and each contained many records with duplicate (and sometimes triplicate) CPEC identification numbers. In virtually all cases, records with identical identification numbers on the same tape proved to represent different graduates, not merely duplicate records for the same graduate. These duplicate identification numbers, which are symptomatic of more general processing problems, appear to reflect three different types of problems.

First, as noted in Section 2, the CPEC identification number system incorporated the high school's county and ZIP code without recognition that more than one school could be located in the same ZIP code area. Thus, some duplicate identification numbers undoubtedly represent graduates of different schools in the same ZIP codes. However, if this was the primary cause of duplicate identification numbers, one would anticipate that the same duplicate numbers would appear on all three tapes. This was true only for a minority of the duplicates.

Second, in the process of repairing the sample for initial errors, CPEC found it necessary to recall the records for some graduates and replace them with records for other graduates with the same identification numbers. If both records were inadvertently left in the final tape, duplicate identification numbers would result. The larger number of duplicate identification numbers in the CSUC Eligibility Tape than in the other two could have occurred through such a process. As shown in Table 1, the UC and CSUC eligibility tapes are in closer agreement on their numbers of cases with unique identification numbers than in their numbers of records with duplicate or triplicate identification numbers.[5]

TABLE 1

NUMBER OF RECORDS ON THE UC ELIGIBILITY TAPE, THE CSUC ELIGIBILITY TAPE AND THE NAME AND ADDRESS TAPE BY STATUS OF THE IDENTIFICATION NUMBER

Status of Identification Number	UC Eligib. Tape	CSUC Eligib. Tape	Name & Address Tape
Unique identification number.....	9,520	9,426	9,216
Duplicate or triplicate number.....	281	538	240
No identification number (blank)...	4	3	-
Total records.....	9,805	9,967	9,456

Third, duplicate identification numbers could occur through transcription and keypunching errors in preparing the three data files. The name and address file was both keypunched and keyverified and is found to have the smallest number of duplicates.

Inadequate processing quality control is also suggested by mismatches between the UC and CSUC Eligibility Tapes. Since these were to be constructed from identical copies of the same transcripts and test scores, discrepancies between them seem attributable to processing and record flow problems. Approximately 450 records were found on the UC Eligibility Tape without a match on the CSUC Eligibility Tape, while approximately 600 records were found on the CSUC Tape without a match on the UC Tape. This suggests processing errors at the magnitude of about 5 percent of the identification numbers processed.[6] When the name and address file was merged with the two eligibility tapes, additional mismatches were identified which could be the result of cumulating processing errors or of transcription errors when the name and address forms were prepared by the high schools. In total, only 8,451 cases were found which matched across all three tapes with a unique identification number.

Full reconciliation of the three files was beyond the resources of the Expanded Eligibility Survey and may not have been possible in any event since the basic link between the eligibility files and the name and address file was made three to twelve months earlier by staff members in more than 900 different high schools. Instead, the decision was made to proceed with as many unambiguous cases as could be identified across the three files in a relatively short time period.

Records with duplicate identification numbers on any file were generally omitted from the sample, since their use might result in linking questionnaire replies with an inaccurate eligibility status. The only exceptions were a small number of graduates who replied to the pilot survey and whose duplicate records could be untangled in several days of clerical labor. Approximately 200 graduates with records missing either from the UC or CSUC Eligibility Tapes also were counted as available for the Expanded Eligibility Survey if their eligibility status could be determined solely from one of these tapes. These were graduates classified as UC eligible on the UC Tape or not CSUC eligible on the CSUC Tape.

One additional problem was encountered in the subsampling plan. The UC eligibility rate from the CPEC Eligibility Study was not based on an exhaustive classification of each graduate as either eligible or ineligible for the University of California. Instead, some graduates with borderline eligibility and missing test scores were placed in a separate category and half counted as UC eligible and half ineligible based on prior admissions experience. For the Expanded Eligibility Survey, these borderline graduates were initially classified as UC eligible to insure their inclusion in the study and then reclassified by a more intensive analysis prior to final weighting.[7]

Total cases available for the Expanded Eligibility Survey and the sample sizes of the pilot and main surveys are summarized in Table 2 by their preliminary eligibility status. A more detailed description of the identification of available cases and the sampling method is provided in Appendix A.

TABLE 2

NUMBERS AND SAMPLES OF GRADUATES INCLUDED IN THE EXPANDED ELIGIBILITY SURVEY BY PRELIMINARY ELIGIBILITY STATUS

Sample	Eligibles		Ineligibles		Total
	UC Eligib.	Other CSUC Eligib.	Minority High School	Other	
Total available[a]	1,436	1,736	895	4,600	8,667
Sampled for pilot survey	152	206	92	518	968
Available for main survey	1,284	1,530	803	4,082	7,699
Sampled for main survey	1,284	1,530	803	1,530	5,147
Sampling fractions:					
Main survey	1.000	1.000	1.000	.375	[b]
Overall	1.000	1.000	1.000	.445	[b]

[a] Excludes records from the CPEC Eligibility Study with a duplicate identification number on any file and those for which a name and address or an eligibility status could not be determined from the merged tapes.

[b] Inapplicable.

In retrospect, the subsampling plan was probably ill advised. While it avoided sending questionnaires to many graduates whose eligibility status could not be determined and reserved resources for extensive followup procedures with those graduates of most interest, these gains were more than offset by the added expenses of more complex weighting procedures which could not be fully anticipated at the time. In addition, the subsampling plan delayed further questionnaire mailings until copies of the UC and CSUC Eligibility Tapes could be obtained and their problems identified.

5. Field Work of the Main Survey

The questionnaire for the main survey differed only slightly from that of the pilot survey. The meanings of a few questions were further clarified with additional text, and the precoding system was slightly revised. The name of the organization conducting the survey also was changed since the pilot survey was conducted by West Coast Community Surveys and the main survey by the Survey Research Center of the University of California at Berkeley.

The first stages of the field work also paralleled those of the pilot survey. These consisted of four standard mailings:

1. An initial mailing of the questionnaire, appeal letter, and return envelope with stamps attached.
2. A reminder letter to those who had not replied.
3. A second mailing of the questionnaire with a stronger appeal letter and second return envelope to those who had not replied.
4. A third mailing of the questionnaire by certified mail requiring a signature for receipt. This mailing also included another appeal letter and return envelope.

The mailings were not concurrent for all parts of the sample. Since UC eligible graduates were most easily identified in the merging of the tapes, questionnaires were mailed to this group first. Mailings to other CSUC eligible graduates and ineligible graduates followed as these parts of the sample were prepared. The dates of initial and subsequent mailings for each part of the sample are shown in Table 3.

Additional followup procedures were employed for those who did not respond to the four standard mailings.

First, a list was prepared of all graduates from the pilot and main surveys whom the Post Office reported as moving to an unknown address. This list was submitted to the California Department of Motor Vehicles for a search of driver's license records for a more recent address. Questionnaires were then mailed to these new addresses when identified.

Second, a subsample was selected of graduates who had not responded to the main survey but were not known to have moved. Attempts were then made to locate and interview these graduates, or members of their families, by telephone. These brief telephone interviews did not seek to elicit all information contained in the questionnaires. Instead, their purpose was to identify key characteristics of nonrespondents so that biases in the returned questionnaires could be identified.

A more complete description of these followup methods and their results is provided in Appendix B.

TABLE 3

BEGINNING DATES OF SUCCESSIVE FIELD WORK STEPS FOR THE MAIN STUDY BY SAMPLING STRATUM

[Note: All dates are for 1977.]

Field Work Step	Eligibles		Ineligibles	
	UC Eligible	CSUC Eligible Only	Minority High Schools	Other
First questionnaire mailing....	Feb. 11	Feb. 28	Mar. 3	Mar. 9
Reminder letter.....	Mar. 4	Mar. 30	Mar. 22	Apr. 1
Second questionnaire mailing...	Apr. 8	Apr. 19	Apr. 12	Apr. 20
Certified questionnaire mailing	Apr. 29	May 17	May 4	May 13
DMV tracing.....	June 10	June 29	June 3	June 29
Telephone interviews.....	June 17	June 28	June 17	June 22
Mailing to DMV located addresses.....	July 7	July 7	July 7	July 14

6. Field Outcomes

The combined field outcomes of the pilot and main surveys are summarized in Table 4 by final eligibility status.[8] This table includes questionnaires received through the DMV tracing but omits graduates reached only by telephone. Both unweighted and weighted totals are provided. The unweighted totals show the raw results of the mailings without taking the subsampling of nonminority high school ineligibles in the main study into account. The weighted totals suggest the field outcomes which would have been obtained if all available cases had been included in the mailings without subsampling.

As previously noted in Section 1, some 1.8 percent of the sample proved to be outside the study population of the Expanded Eligibility Survey. These included 1.0 percent who had died or permanently moved from California and 0.8 percent who claimed they had not graduated from high school between July 1, 1974 and June 30, 1975. Both figures are probably low estimates, since additional persons with these characteristics undoubtedly existed among those who could not be located or did not reply.[9]

Completed questionnaires were received from 4,131 graduates or about two-thirds (65.6 percent) of those known or assumed to meet the definition of the study population. Only 3.3 percent explicitly refused to participate or returned an incomplete questionnaire. An additional 20.4 percent did not reply to any of the mailings although they appeared to reside at their last known address.

About a tenth (10.7 percent) of the graduates proved unlocatable, that is, their questionnaires were returned by the Post Office as undeliverable and neither the Post Office nor the Department of Motor Vehicles could provide

TABLE 4

COMBINED FIELD OUTCOMES OF PILOT AND FINAL SURVEYS
BY REVISED ELIGIBILITY STATUS

Field Outcome	UC Eligible	Other CSUC Eligible	Minority High School	Other	Totals Un-weighted	Totals Weighted[a]
Total sample.....	1,358	1,803	897	2,057	6,115	8,667
Known Out of Population *Numbers*						
Total.....	15	28	8	48	99	159
Moved from California, died..	7	13	2	28	50	85
Incorrect graduation date....	8	15	6	20	49	74
Percent of Total Sample						
Total known out of population..	1.1%	1.5%	0.9%	2.3%	1.6%	1.8%
Moved from California, died..	0.5%	0.7%	0.2%	1.3%	0.8%	1.0%
Incorrect graduation date....	0.6%	0.8%	0.7%	1.0%	0.8%	0.8%
Assumed in Population[b] *Numbers*						
Total.....	1,343	1,775	889	2,009	6,016	8,508
Complete questionnaire.....	1,158	1,354	448	1,171	4,131	5,584
Refused, incomplete quest'nre	19	42	50	76	187	281
No response.....	111	246	230	513	1,100	1,736
Post Offc. return, unlocatab.	55	133	161	249	598	907
Percent in Population						
Total.....	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Complete questionnaire.....	86.2%	76.3%	50.4%	58.3%	68.7%	65.6%
Refused, incomplete quest'nre	1.4%	2.4%	5.6%	3.8%	3.1%	3.3%
No response.....	8.3%	13.8%	25.9%	25.5%	18.3%	20.4%
Post Offc. return, unlocatab.	4.1%	7.5%	18.1%	12.4%	9.9%	10.7%
Percent complete among locatable persons in the population.....	89.9%	82.5%	61.5%	66.5%	76.2%	73.5%

[a] Results weighted to the total available sample of the 1976 CPEC Eligibility Study.

[b] These are graduates not known to be out of the population.

a more recent address. This figure may understate the actual proportion moving to an unknown address, since undeliverable mail is not always returned to the sender even when so requested on the envelope.

Since the unlocatables had no opportunity to reply to the questionnaire, the success of the questionnaire mailings in encouraging replies is perhaps best indicated by the return rate among locatable graduates. This is shown in the bottom row of Table 4. About three-fourths (73.5 percent) of the graduates who received a questionnaire answered it.

In general, the survey was far more successful in obtaining completed questionnaires from UC and CSUC eligible graduates than from those ineligible to attend these institutions. Fully 86.2 percent of the UC eligible sample responded, as did 76.3 percent of the graduates eligible to attend CSUC but not UC. In total, 80.6 percent of these two eligible groups returned a completed questionnaire. Among eligibles who received a questionnaire (that is who were not unlocatable), fully 85.7 percent replied.

By contrast, only slightly more than half the ineligible graduates returned a usable questionnaire. This included 50.4 percent of the ineligibles who attended a minority high school and 58.3 percent of the remaining ineligibles. This poorer return rate is partially attributable to the greater difficulties of obtaining a current address for the ineligibles. Almost a fifth (18.1 percent) of the minority high school ineligibles and an eighth (12.4 percent) of the remaining ineligibles were unlocatable. However, even when questionnaires were deliverable, the ineligibles were less likely to reply. Among the locatable ineligibles, only 61.5 percent of those attending minority high schools and 66.5 percent of the others replied.

These results are consistent with previous studies employing mailed questionnaires which frequently report that the two most potent factors in response are: (1) interest in the topic; and (2) comfortableness with written forms of communication.[10] Although a serious attempt was made to broaden the content of the questionnaire to cover other career choices than college attendance, its primary emphasis on higher education may have discouraged participation by graduates without this interest. Other ineligibles may have failed to reply because the task of completing a questionnaire was viewed as more difficult or burdensome than it would appear to the academically oriented UC and CSUC eligible graduates.

Although any mailed questionnaire survey of recent high school graduates would face these same problems, the Expanded Eligibility Survey was especially handicapped by the long delay between high school graduation and first mailings of the questionnaire. If this time interval could be shortened by the design changes proposed in Section 10, both the losses from unlocatability and uncooperativeness undoubtedly could be reduced.

7. Weighting

To facilitate the preparation of estimates from the Expanded Eligibility Survey, the questionnaire results were weighted by attaching a noninteger weight to each case. The development of these weights had five primary objectives.

1. To compensate for the subsampling of nonminority high school ineligibles in the main study by weighting each case by the reciprocal of its probability of selection.

2. To compensate for the differential return rates by eligibility status, type of high school attended by ineligibles, grade point average, and sex.

3. To provide a convenient weighted total of 10,000 to facilitate percentaging while approximating the sample size of the CPEC Eligibility Study.

4. To adjust the Expanded Eligibility Survey results to the official UC and CSUC eligibility rates reported by the CPEC Eligibility Study for the state as a whole and for each of six geographic areas within California.

5. To approximate the ethnic composition of public high school seniors reported in the California Department of Education's 1973 Racial Census.

A detailed description of each weighting step is provided in Appendix C. Here only three general points about the weights will be reviewed.

First, although the first four weighting objectives were achieved, the fifth was not fully accomplished. As shown in Table 5, weighted estimates prepared from the Expanded Eligibility Survey appear to underrepresent Black high school graduates.[11] The source of this apparent bias is unknown and conceivably could have occurred at any of several points, including: (1) deficiencies in the original CPEC Eligibility Study sample; (2) disproportionate losses of Black graduates among cases unavailable for the Expanded Eligibility Survey, such as those omitted for duplicate identification numbers or missing information; (3) higher rates of residential mobility among Black graduates making larger proportions unlocatable; (4) lower rates of response by Black graduates even among persons of the same eligibility status, type of high school, geographic region, sex, and grade point average; or (5) a combination of these and other factors.

Second, it should be emphasized that no form of weighting will fully compensate for field losses from unlocatability and other forms of nonresponse. In preparing weights, it is necessary to assume that unlocatables and other nonrespondents are similar to other persons of the same general characteristics who did respond, but this is not necessarily the case.

TABLE 5

ESTIMATED ETHNIC COMPOSITION OF 1974-75 GRADUATES COMPARED WITH THE 1973 DEPARTMENT OF EDUCATION RACIAL CENSUS OF HIGH SCHOOL SENIORS

Ethnicity	1974-75 Graduates Weighted Estimates from the Expanded Eligibility Survey (1)	1973 Seniors Department of Education Racial Census (2)	Difference (1) - (2) (3)
Black.....	5.1%	7.9%	-2.8
Chicano/Latino/Filipino	13.8%	12.7%	+1.1
Asian-American.....	4.1%	3.1%	+1.0
Anglo and other.....	77.0%	76.3%	0.7
TOTAL.....	100.0%	100.0%	0.0
Sample size.....	(4,131)	(281,721)	—

For example, ineligibles who attended minority high schools but are no longer traceable through their former addresses may have come from more underprivileged or unstable homes than ineligibles from the same high schools who remained at the same address or were locatable through their parents. Attempts to estimate the characteristics of the former by upweighting replies from the latter may not provide a fully accurate picture.

Third, since high proportions of the UC and CSUC eligible graduates were locatable and did respond to the survey, the weighting process has little effect on the estimated characteristics of these groups. The major consequences of weighting, and especially nonresponse weighting, occur for the ineligibles. Tabulations describing the ineligibles or all graduates combined (of which the ineligibles are the majority) should, therefore, be interpreted with greater caution.

8. Eligibility and Ethnicity

One objective of the Expanded Eligibility Survey was to estimate the UC and CSUC eligibility rates for each of California's major ethnic groups and to describe the ethnic composition of the UC and CSUC eligibility pools. Since weighted estimates from the Expanded Eligibility Survey proved somewhat at variance from other sources of information on the ethnic composition of public high school students, further steps were taken to construct a cross-tabulation of ethnicity by eligibility status, drawing on information beyond the weighted estimates.

Two additional procedures were used. First, the name of each unlocatable and nonresponding sample graduate was reviewed to identify those

with Spanish or Asian surnames. These counts were then used to adjust the estimates of Spanish heritage and Asian-American graduates by eligibility status. Second, a linear regression projection method, introduced by F. L. Filion, was employed to estimate the proportion of Black graduates in each eligibility status from trends in the percent of Black graduates responding to successive questionnaire mailings.[12] This projection method provides results of uncertain accuracy, but appeared to be the best procedure available with existing information. Further details are provided in Appendix D.

The results of these adjustments are shown in Tables 6 and 7, which are labeled "adjusted, weighted estimates."[13] The ethnic category labeled "Spanish heritage" is intended to encompass all persons of direct or indirect Spanish origin or descent, including Mexican-Americans, Latinos, and Filipino-Americans. Filipino-Americans were included in this general grouping since most respondents identifying themselves as Filipino in the questionnaires were found to have Spanish surnames. The ethnic category labeled "Asian-American" is intended to include Chinese-, Japanese-, Korean-, and Vietnamese-Americans as well as all other graduates with an ethnic background from mainland Asia. For this table, separate estimates could not be prepared for smaller ethnic groups, such as: (a) Hawaiians, Samoans, and other Pacific Islanders; and (b) American Indians or Native Americans and Alaskans. These are combined with non-Spanish whites under the general heading of "Anglo and other." More detailed ethnic distributions of the UC and CSUC eligibility pools are provided in the report of the Expanded Eligibility Survey prepared by the University of California Office of Outreach Services.

As shown in Table 7, the four major ethnic groups differ greatly in their UC and CSUC eligibility rates. While about 5 percent of the Black and Spanish heritage graduates were eligible for the University of California, the eligibility rate of Asian-Americans was almost 40 percent, about eight times higher. Similarly, while less than a seventh (13.4 percent) of the Black graduates were eligible for the California State University and Colleges, more than three-fifths (61.0 percent) of the Asian-Americans were CSUC eligible. Although these figures should be regarded as approximate estimates, their general magnitudes seem relatively stable across a variety of weighting and adjusting procedures.

9. Cautions in the Use and Interpretation of the Expanded Eligibility Survey

Copies of the Expanded Eligibility Survey data tape and an accompanying codebook will be available for public use through the State Data Program of the Survey Research Center of the University of California at Berkeley after October 1, 1978. To protect the confidentiality of respondents, neither the names of respondents, nor the high schools which they attended, will be identifiable on these tapes. The following remarks are directed primarily to persons who may wish to analyze this data set for scholarly or policy-relevant purposes. Other readers may prefer to turn to the following section.

First, it is recommended that all tabulations prepared from these tapes be run in weighted form. However, since the weights will inflate the apparent sample size, the actual numbers of respondents in each eligibility status, as shown in Table 4, should be borne in mind.

TABLE 6

ETHNICITY OF PUBLIC HIGH SCHOOL GRADUATES BY UC AND CSUC ELIGIBILITY: ADJUSTED, WEIGHTED ESTIMATES[a]

Ethnicity	Eligibles						Ineligibles		Total	
	UC Eligibles		Other CSUC Eligibles		Total CSUC Eligibles					
	Numb.	Perc.	Numb.	Perc.	Numb.	Perc.	Numb.	Perc.	Numb.	Perc.
Black.....	37	2.5%	62	3.1%	99	2.8%	638	9.8%	737	7.4%
Spanish heritage	66	4.5%	200	9.9%	266	7.6%	1,088	16.7%	1,354	13.5%
Asian-American..	140	9.4%	79	3.9%	219	6.3%	140	2.2%	359	3.6%
Anglo and other.	1,241	83.6%	1,671	83.1%	2,912	83.3%	4,638	71.3%	7,550	75.5%
TOTAL.....	1,484	100.0%	2,012	100.0%	3,496	100.0%	6,504	100.0%	10,000	100.0%

[a]See text for source.

TABLE 7

UC AND CSUC ELIGIBILITY RATES BY ETHNICITY OF GRADUATE ADJUSTED, WEIGHTED ESTIMATES[a]

Ethnicity	Percent UC Eligible	Percent CSUC Eligible	Weighted Base of Percents
Black.....	5.0%	13.4%	737
Spanish heritage.....	4.8%	19.6%	1,354
Asian-American.....	39.0%	61.0%	359
Anglo and other.....	16.4%	38.6%	7,500
TOTAL.....	14.8%	35.0%	10,000

[a]See text for source.

Second, because the survey was more successful in obtaining questionnaire replies from UC and CSUC eligible gradutes than from ineligible graduates, the data set should be regarded as providing more reliable information on the UC and CSUC eligibility pools than on ineligible graduates or all graduates combined.

Third, in any survey with less than a 100 percent response rate, it should be recognized that persons with more successful lives are more likely to be represented than those who have been less successful by conventional standards. The functionally illiterate, the chronically unemployed, those with no usual place of residence, and the criminal underworld are less likely to be reached by a mailed questionnaire and less likely to respond to it if they are reached. Consequently, estimates of college attendance, employment, and similar measures of conventional success will be somewhat inflated when derived from such a survey.

Fourth, eligibility for the University of California and the California State University and Colleges should not be confused with admission to these institutions. Eligible respondents sometimes report that they were denied admission, perhaps because they applied to an unusually popular campus or program, such as pre-medicine or engineering, which imposed stricter admissions criteria than the institution as a whole. Conversely, graduates found ineligible at the time of high school graduation sometimes report that they applied for admission and were accepted. Some may have made up course work deficiencies; retaken the SAT, ACT, or CEEB examinations and obtained a higher score; or transferred after a year in a community or private college. Others may have been accepted through special admissions programs designed to aid underprivileged students. Eligibility at the time of high school graduation and subsequent admission or denial of admission are separable

facts and meaningful inconsistencies between them should be expected.

Finally, the Expanded Eligibility Survey has limited usefulness for the examination of very small subsets of high school graduates, such as members of particular minority groups whose eligibility would be changed by minor revisions in admissions policies. As more fully explained in Section 11 of this report, a sample at least ten times larger would be required to meaningfully explore these subtleties.

10. Recommendations for Future Expanded Eligibility Surveys

Based on the experiences of the 1976-77 Expanded Eligibility Survey, the following recommendations are offered for future surveys designed to achieve the same objectives. These recommendations are solely those of the authors of this report and may not represent the views of the Office of Outreach Services to which this report is addressed nor of any other office of the University of California.

First, it is strongly recommended that future expanded eligibility surveys be more closely coordinated with future high school eligibility studies. Ideally, the two should be combined into one integrated study and conducted by an integrated staff with demonstrated experience in survey sampling, questionnaire design, field administration, and data processing for large-scale surveys. Without such close integration, the objectives of future expanded eligibility surveys may not be fully met, and the two studies may provide inconsistent or disparate results. Close integration is also advisable to encourage changes in the design and administration of future high school eligibility studies necessary for effective and efficient expanded eligibility surveys.

Second, the staff of the combined studies would most appropriately be located within, or report to, the California Postsecondary Education Commission. The Commission has a continuing mission to undertake periodic high school eligibility studies which could be expanded to include the collection of supplementary ethnic and social data on those graduates whose eligibility is assessed. The Commission also could be viewed as a more neutral source of reports of results than either of the two segments of the State's higher education system.

Third, if the Commission is responsible for both studies in the future, it is strongly recommended that the CPEC staff be expanded to include at least one full-time person with professional training and experience in the design and administration of large-scale surveys. Resources available to the Commission also should be sufficient to retain a panel of outside consultants to aid in design and analysis. Without such professional staffing and guidance, the quality of both studies, and therefore the trustworthiness of their results, may remain questionable.

Fourth, the two studies should be allowed a sufficient time schedule to permit careful sampling, data collection, and processing. Planning should begin at least 12 months prior to major data collection, and at least 18 months should be allowed for data collection, processing, quality control, and report writing. A design and time schedule to permit completion of both studies within this 30 month interval is presented below.

Fifth, since some high schools were reluctant to participate in either study on the grounds that this might violate the Privacy Act or similar laws, necessary legal research on these points should be completed well in advance of the planned field work and briefs covering these points

prepared for high schools who request them. Encouragement to participate also might be enhanced by according the study a special status as a Legislatively Mandated Study much as some federal studies are given the special status of Congressionally Mandated Studies.

Sixth, future high school eligibility studies should employ centralized sampling methods which permit close quality control of sampling, the assignment of unique and unambiguous identification numbers, and the maintenance of a central roster of sampled graduates. This might be achieved either by asking each high school to submit a full list of its graduates from which samples are drawn at a central office or by dispatching staff to each high school to select the sample and obtain the necessary records. The use of probability proportional to size cluster sampling also should be considered to avoid the necessity of requesting lists of graduates from each high school, especially those with few graduates.

Seventh, since both studies are intended to provide estimates of high precision, with results expressed to at least one decimal place, future high school eligibility studies should devote much greater attention to transcription and processing quality control, especially of those records employed to assess UC and CSUC eligibility. Full reconciliation of independently prepared data files should be an integral part of this process. Data tapes with processing errors in the neighborhood of 5 percent of all records cannot be relied upon to provide eligibility estimates of the preciscion desired.

Eighth, if administrative, fiscal, or staffing constraints preclude improved sampling and quality control procedures in future high school eligibility studies, future expanded eligibility surveys should not be attempted.

Ninth, if mailed questionnaires are to be employed in future expanded eligibility surveys, the range of identifying information obtained for each graduate should be expanded to facilitate tracing and weighting. This should include: (a) name; (b) address; (c) sex; (d) exact birthdate; (e) parent's or guardian's name; (f) telephone number; and, if possible, (g) ethnicity.

Tenth, if mailed questionnaires are to be used for future expanded eligibility surveys, first mailings to June graduates should begin no later than four months following their graduation so that most will be locatable through their graduation addresses and the questions will be pertinent to greater numbers. This would require major changes in the time schedule and sampling methods of accompanying high school eligibility studies as more fully described below.

Eleventh, if first mailings to June graduates must be delayed more than four months after their graduation, future expanded eligibility surveys should focus exclusively on UC and CSUC eligible gradutes, and no attempt should be made to identify the characteristics of ineligible graduates through questionnaires. This would permit an ethnic and social description of the UC and CSUC eligibility pools but would not provide estimated UC and CSUC eligibility rates by ethnicity or other social characteristics.

One possible design which would meet many of the above objectives is outlined in Exhibit 1. For concreteness, the plan is presented for a hypothetical combined high school eligibility study and expanded eligibility survey of 1979-1980 graduates. The year selected is arbitrary, since scheduling of the next study lies outside the scope of this report.

One key element of the plan is to begin the sampling of most graduates before they complete their senior year. High schools would be approached in

January to obtain: (a) lists of those who had graduated since July 1; and (b) all seniors scheduled for graduation through June 30. If staff members were dispatched to the high schools, they could perform the sampling on the spot and obtain information needed for expanded eligibility questionnaire mailings during the same visit. If the process was handled by mail, the first request would be only for a listing of graduates and seniors by name. Additional information would be requested at a later time only for those sampled, perhaps 1/20th to /30th of the seniors. With either method, it should be possible to obtain sufficient information for questionnaire mailings to most graduates within four months of their graduation.

Transcripts and test scores for sampled June graduates would be requested in September or October, after they had sufficient time to take the college aptitude tests for college entry in the fall. Since the sampling tasks and winning the high school's cooperation would have been completed during the winter and spring, collection of the transcripts and test scores for the sample would require very little time by the high school staff at this point. The plan would require one additional piece of information about each sampled senior: confirmation that he or she had actually graduated by June 30. Those who did not graduate would be removed from the sample as ineligible.

While this plan was primarily developed to facilitate earlier mailings for future expanded eligibility surveys, it also would accelerate the collection of transcripts and test scores for future high school eligibility studies. Thus, it might benefit both studies.

EXHIBIT 1

PROPOSED TIME SCHEDULE FOR A COMBINED ELIGIBILITY AND EXPANDED ELIGIBILITY STUDY OF 1979-80 GRADUATES[a]

Date	Activities
June 1979	Initial planning begins.
Jul.-Dec. 1979	Preparation of a machine-readable list of all public high schools in California and confirmation of doubtful cases by mail or telephone as necessary. Submission of preliminary lists to local authorities for review.
	Development and pretesting of an expanded eligibility questionnaire.
	Development of computerized mailing procedures to high schools and graduates.
Jan. 1980	First letters to all high schools requesting full lists of: (a) all persons graduating since July 1, 1979; and (b) all seniors expected to graduate by June 30, 1980.
Feb.Jun. 1980	Selection of the sample of graduates and probable graduates as the lists are received.
	Questionnaire mailings to sampled persons who have already graduated as they are sampled.
	Second letters to high schools who have supplied lists of seniors requesting address, parent's or guardian's name, exact date of birth, and telephone number of each sampled senior. This will be about one-twentieth to one-thirtieth of the seniors.
	Personal visits to high schools who are not providing the necessary information.
Jul.-Aug. 1980	Processing of received information and continued followup when necessary.
Sept. 1980	Questionnaire mailings to June graduates.
	Requests to high schools for transcripts, test scores, and confirmation of graduation for sampled graduates. This activity is postponed to the fall when school offices reopen and June graduates have had sufficient time to take college aptitude tests.

[a]The 1979-1980 year chosen as an illustration for the combined is arbitrary and not meant to recommend any particular year for the next eligibility study.

EXHIBIT 1 -- Continued

Date	Activities
Oct. 1980- Apr. 1981	Followup mailings and tracing of graduates for the expanded eligibility survey. Followup requests for transcripts, test scores, etc. as necessary, including personal visits when required. Eligibility review by UC and CSUC as transcripts are received.
May-Jul. 1981	Keypunching and processing of all materials. Reconciliations of all records against a machine-readable master list. Returning of records to UC and CSUC for correction of inconsistencies, duplications, and missing information when necessary. Deletion of seniors who did not graduate by June 30, 1980.
Aug.-Dec. 1981	Analysis and report preparation.

11. A Note on Sample Size

The 1976 High School Eligibility Study based its estimated UC and CSUC eligibility rates on a sample of approximately 10,000 public high school graduates. The previous High School Eligibility Study, conducted in 1966, employed a sample of 22,300, more than twice that of the 1976 study. The question may be raised as to the proper size for such studies.

The answer primarily depends on the purposes for which the data are collected and the precision required of resulting estimates. If non-response, processing, and other nonsampling errors can be effectively controlled, a simple random sample of 10,000 graduates is sufficient to estimate the UC eligibility rate within two-thirds of a percentage point (such as 12.4 $\pm$ 0.6 percent) and the CSUC eligibility rate within nine-tenths of a percentage point (such as 33.3 $\pm$ 0.9 percent), at the 95 percent confidence level.[14]

As shown in Table 8, doubling the sample size does not greatly improve the precision of the estimates. With a simple random sample of 20,000 graduates, the UC eligibility rate may be estimated within about half a percentage point and the CSUC rate within two-thirds of a percentage point. These modest gains in precision probably are not worth the cost of doubling the sample. The 1976 study appears to have made a more reasonable choice of sample size.

Moreover, larger samples do not necessarily provide more accurate estimates. They may result in estimates of less accuracy if the larger sample strains resources and leads to a deterioration of quality control. Based on the experiences of the 1976 CPEC Eligibility Study, it appears that future high school eligibility studies are in far greater need of

TABLE 8

THE PRECISION OF ESTIMATED UC AND CSUC ELIGIBILITY RATES FOR SAMPLES OF VARIOUS SIZE

Number of Graduates Sampled =	95 Percent Confidence Intervals[a]	
	UC Eligibility Rate	CSUC Eligibility Rate
5,000	0.91%	1.30%
10,000	0.64%	0.91%
20,000	0.44%	0.63%
30,000	0.35%	0.50%
50,000	0.26%	0.38%
100,000	0.17%	0.24%

[a]Simple random sampling from a population of 295,000 is assumed where the UC eligibility rate is in the neighborhood of 12.5 percent and the CSUC rate is in the neighborhood of 33.3 percent.

improved sampling procedures and quality control than of a larger sample size.

Although a sample of 10,000 graduates appears adequate to estimate the UC and CSUC eligibility rates within tolerable limits, it may not be sufficient to answer all possible questions which may be raised once the information is collected. For example, in recalibrating the University of California's admission standards, a formula was proposed (and later adopted) which accorded slightly more weight to college aptitude tests. Since minority students are known to perform more poorly on these tests, it was reasonable to ask how many Black and Chicano students eligible for UC under the old admission standards would be ineligible under the proposed new formula.[15] Unfortunately, a total sample of 10,000 graduates is insufficient to provide a meaningful answer to this question.

To illustrate the difficulties, let us concentrate on Black high school graduates. As suggested by Table 6, they may comprise about 7.4 percent of all public high school graduates in the state, so that one would expect to include about 740 Black graduates in a total sample of 10,000 . However, only 5 percent of Black graduates were eligible for UC under the old admission standards, so the sample of 10,000 graduates would be expected to include only about .05 x 740 = 37 Black UC eligible graduates. Most of these would not be on the borderline of eligibility, but would have sufficiently high grades and/or test scores to be eligible under either the old or new standards. If we assume that a maximum of 10 percent were potentially affected, the total sample of 10,000 would provide only 3 or 4 critical cases for examination. A single keypunching or transcription error among these cases could greatly affect the conclusions drawn.

To assess the impact of changed eligibility criteria on UC eligible Black graduates, a proportional total sample of perhaps 100,000 would be required merely to obtain suggestive results. Fully trustworthy measures of impact would require a census of all 295,000 graduates. The costs of increasing high school eligibility studies to these sizes could easily range from $1,000,000 to at least $5,000,000, assuming each transcript was carefully reviewed and a corresponding expanded eligibility study was conducted to obtain information on ethnicity and other social characteristics. Before expending such funds for research, alternate uses of these monies to achieve the same objectives should be considered.

One sampling plan which would seem to provide the needed information without this large increase in total sample size would be to oversample high schools with predominantly minority enrollments. However, such a plan assumes that most UC eligible minority graduates attend minority high schools. Tabulations from the 1976-77 Expanded Eligibility Survey indicate that this is not the case. Only a third of the UC eligible minority graduates and only two-fifths of the CSUC eligible minority graduates attended a high school where 40 percent or more of the seniors were non-Asian minorities. An oversampling of predominantly minority high schools would focus on eligible minority graduates from atypical backgrounds.

The same problem may be approached from another perspective. From Table 6 it may be estimated that there were a total of about 3,000 Black, Chicano, Latino, and Filipino public high school graduates in California eligible to attend the University of California in 1975. Assuming that a maximum of 10 percent would be affected by revised admission standards, the maximum net impact would be on about 300 graduates. However, among UC

eligible graduates, less than half actually attend the University; the rest prefer to attend CSUC, a local community college, a private institution, or an out-of-state college. Thus, the total number of minority graduates whose lives would be affected by the change would be somewhere in the neighborhood of 150 for California as a whole. If the costs of increasing the sample of future high school eligibility studies to assess this impact amounted to say $1,500,000 to $3,000,000, this would average about $10,000 to $20,000 per affected student. Even allowing for the fact that such studies are conducted only at periodic intervals, the funds would be better spent on special admission programs or similar activities than on larger sample sizes for eligibility studies.[16]

FOOTNOTES

(1) California Postsecondary Education Commission, 1976 High School Eligibility Study, (Sacramento: California Postsecondary Education Commission, December 13, 1976), pp.6-7.

(2) The final sample size of the CPEC Eligibility Study is somewhat ambiguous. Figures presented in the CPEC Report, ibid., are neither fully consistent nor in complete agreement with counts from the data tapes produced by the study, as illustrated below.

CPEC Report	Sample Size
Transcripts received by CPEC and sent to UC and CSUC for evaluation (pp. 11 and 13).....	9,965
Transcript evaluations returned by CSUC (pp. 14 and 24)	9,972
Transcript evaluations returned by UC (pp. 14 and 23)..	9,469
Counts from Data Tapes	
CSUC Eligibility Tape.....	9,967
UC Eligibility Tape.....	9,805

At least in part, major discrepancies may represent cases received too late (or with too many data errors) to be usable in final estimates. The higher figures in the range of 9,965-9,972 also may include some inappropriately sampled graduates whose records were inadvertently left in the final sample and included in the eligibility estimates. See Section 4 and footnote 5.

(3) Ibid., pp. 7-10.

(4) Cf., California State Department of Education, Bureau of Intergroup Relations, "Racial and Ethnic Distributions of Pupils and Staff in California Public Schools, Fall 1973," (Sacramento: California State Department of Education, September 1, 1974). The figures employed in

identifying non-Asian minority schools were obtained from a data tape of the Racial Census made available by the California Department of Education.

(5) If the CSUC Eligibility Tape does contain inappropriate cases inadvertently left in the file, the usable sample of the CPEC Eligibility Study would be less than the 9,965-9,972 cases reported by CPEC and employed in calculating the CSUC eligibility rate. The reported return rate of the study also would be in error.

(6) At least occasional errors and inconsistencies also were apparent in the information used to assess eligibility, such as persons with reported grade point averages below 3.0 who were classified UC eligible. In view of the low standards of processing quality control in the CPEC Eligibility Study, eligibility rates estimated from this study should be recognized as accurate within perhaps no more than a percentage point or two.

(7) See Appendix C.

(8) Final eligibility status differs from preliminary eligibility status by a reclassification of some borderline UC eligible graduates by the methods described in Appendix C.

(9) For example, of the 185 questionnaire respondents reached and interviewed by telephone, 3 percent were found to be out of the study population.

(10) Cf., Claire Selltiz et al., Research Methods in Social Relations, (New York: Henry Holt, 1959), pp. 241-242; and Mildred B. Parten, Surveys, Polls, and Samples, (New York: Harper, 1950), Chapter 11.

(11) Although the ethnic composition of public high school seniors reported by the California Department of Education's 1973 Racial Census is employed as the best available basis of comparison for ethnic tabulations

(11) -- Continued --

from the Expanded Eligibility Survey, the Racial Census data are less than ideal for this purpose for several reasons. First, the Racial Census applies to 1973 rather than to 1975. Second, it presents results for fall seniors rather than high school graduates. Third, the Racial Census did not encompass the full range of public high schools, including evening and adult schools, included in the CPEC Eligibility Study. Fourth, the ethnic categories of the Racial Census were not sufficiently well defined to permit unambiguous interpretation. And, finally, the Racial Census was not based on actual counts of students by ethnicity but on estimates prepared by the principals of each responding school.

(12) Cf., F. L. Filion, "Estimating Bias Due to Nonresponse in Mail Surveys," Public Opinion Quarterly, 40 (Winter, 1975-76), pp. 482-92.

(13) Since these tables incorporate information not included in the public use tapes of the Expanded Eligibility Survey, they cannot be reproduced from these tapes.

(14) In the CPEC Report of the 1976 Eligibility Study, estimated eligibility rates are presented to two decimal places: 14.84 percent for UC and 34.96 percent for CSUC. This suggests estimates of greater precision than warrented by the sample size. The results would be more appropriately expressed as 14.8 ± 0.6 percent and 35.0 ± 0.9 percent. As suggested in footnote 6, some additional allowance for error also should be made for the study's low standards of processing quality control.

(15) The heated and well publicized discussion of this question focused solely on the numbers of minority graduates then eligible for UC who would become ineligible under the new formula. Curiously, the numbers of previously ineligible minority and of nonminority graduates who would become UC

(15) -- Continued --

eligible under the new formula was never considered. Since the admission formula was being changed, not merely tightened up, the total impact of the new formula would depend on the ethnic composition both of those excluded by the new formula and those made eligible by it.

(16) One nonsurvey method of assessing the impact of changed admissions policies on minorities is to examine the transcripts of minority applicants who were accepted for admission to learn how many would be rejected under the new formula. This method has the advantage of focusing directly on those minority graduates most likely to be affected while eliminating the need for transcript evaluations of nonmincirty graduates. One serious limitation with this method, is that it ignores graduates not eligible under the old standards who would become eligible under the new formula. Since they also may have an impact on the eligibility pool's ethnic composition, although probably a less substantial one.

PART III

APPENDICES

Appendix A

Sampling Methods

This appendix presents additional details about the sampling methods of the 1976-77 Expanded Eligibility Survey. The sample was selected in two main stages. First, a cross-sectional sample of about 1,000 graduates was chosen during the summer of 1976 for the pilot survey. Second, a disproportionately stratified sample of about 5,150 remaining graduates was chosen during the winter of 1977 for the main survey.

1. Pilot Survey Sample

Sampling for the pilot survey began in August, 1976, before the CPEC Eligibility Study was complete. At this point, names and addresses had been received for 7,828 graduates, about 83 percent of the final pool of 9,456 names and addresses eventually obtained. A systematic random sample of every eighth graduate was selected from the 7,828 available providing a sample of 979. Eleven cases were deleted prior to field work when a review of their transcripts indicated that they had not graduated from high school between the required dates. This left a final sample of 968 for the pilot survey.

2. Main Survey Sample

The main survey was designed to survey all remaining graduates chosen for the CPEC Eligibility Study who were: (1) UC eligible; (2) CSUC eligible; or (3) who had attended a high school with a substantially non-Asian minority student body. In addition, the main survey would sample three-eighths of all remaining graduates, that is, ineligibles who had not graduated from a minority high school.

The major impediments to this plan were the inconsistencies among (and duplicate identification numbers within) the three tapes available to construct the sample: (1) the Name and Address Tape; (2) the UC Eligibility Tape; and (3) the CSUC Eligibility Tape. To simplify the task, it was assumed that UC and CSUC eligibility formed a strict hierarchy, so that all UC eligible graduates were also CSUC eligible. Thus, graduates classified UC eligible on the UC tape were assumed to be CSUC eligible as well, even if they could not be found on the CSUC Tape. Similarly, graduates classified CSUC ineligible on the CSUC tape were assumed to be ineligible for both segments, even if they could not be found on the UC Tape.

Four main sampling strata were established.

1. UC eligible graduates, including those with borderline or ambiguous UC eligibility.

2. CSUC-only eligible graduates, those eligible for CSUC but not included in stratum 1.

3. Minority high school ineligibles, those ineligible for CSUC who attended a high school in which non-Asian minorities comprised at least 40 percent of the student body.

4. Other ineligibles, that is, ineligibles who did not attend a minority high school.

As a first step in sampling, each tape was sorted and searched for duplicate (or triplicate) identification (ID) numbers. Each set of duplicates (or triplicates) was then replaced by a single dummy or "ghost" record, retaining only the identification number, while the full duplicate records were printed out for possible future reference. These operations are shown schematically in the first two rows of Exhibit A1. To avoid matching a questionnaire with an inaccurate eligibility status, cases with ghost records which could obscure eligibility status or the proper name

and address were not included in the sample.

The Name and Address (N/A) Tape and the UC Eligibility Tape were then sort-merged to form Merged Tape 1. This merged tape was also compared with a file of graduates previously selected for the pilot survey to identify those already sampled. The UC eligible stratum for the main survey was then defined as all graduates classified UC eligible on the UC Tape, who had unique identification numbers both on the UC and N/A Tapes and who had not already been sampled for the pilot survey.

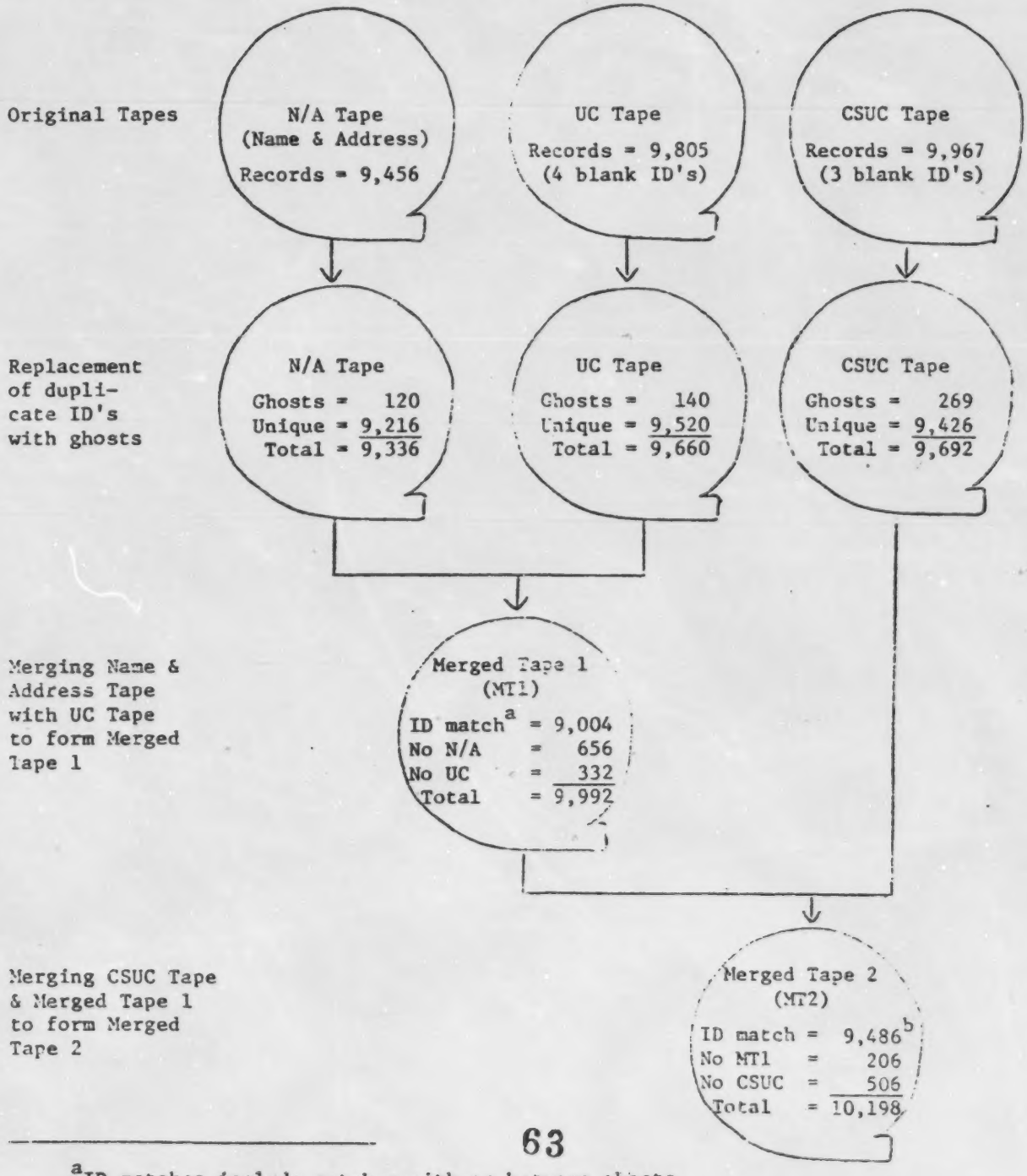
Merged Tape 1 was then sort-merged with the CSUC Eligibility Tape to form Merged Tape 2. The CSUC-only stratum for the main survey was then defined as all graduates classified CSUC eligible on the CSUC Tape who had unique identification numbers on both the CSUC and N/A Tapes and who had not already been sampled for the pilot survey nor included in stratum 1.

A tape for high schools in the California Department of Education's 1973 Racial Census was next searched to identify those in which non-Asian minorities comprised at least 40 percent of the student body. A total of 123 such schools were identified. The CPEC high school code for each minority high school was then determined, and a computer program was written to compare each graduate's high school code on Merged Tape 2 with this list. A code for minority high school status was then entered on a new version of Merged Tape 2.

The minority high school ineligible stratum was then defined for the main study as all graduates classified as ineligible for CSUC on the CSUC Tape, who had graduated from one of the 123 identified minority high schools who had unique records on the CSUC and N/A Tapes, and who had not already been sampled for the pilot survey.

EXHIBIT A-1

MERGING OF MAJOR TAPES USED IN SAMPLING



[a] ID matches include matches with or between ghosts.

[b] These 9,486 ID matches include only 8,451 cases with unique ID's on each tape and triple matches across tapes.

All graduates meeting the definitions of the UC eligible, CSUC-only eligible, and minority high school ineligible strata as defined above were sampled for the main survey. Address labels were printed from the merged tapes and various printouts were prepared to facilitate field administration.

At this point, 4,082 unsampled graduates remained on Merged Tape 2 with unique identification numbers matching on the CSUC and Name and Address Tapes. They comprised the "other ineligibles" stratum. A computer program then systematically selected 3 of every 8 of these remaining usable cases to provide a sample of 1,530 non-minority high school ineligible graduates for the main survey. A summary of matches and nonmatches across the three tapes employed in sampling is provided in Table A1.

3. Sampling Fractions

Since all UC eligible, CSUC eligible, and minority high school graduates from the CPEC Eligibility Study were sampled either for the pilot or main survey (if usable records were available for them), the sampling fraction within these strata was 1.000 from the population of usable records. The sampling fraction within the nonminority high school stratum is more complex.

Nonminority high school ineligibles whose names and addresses were available at the time of the pilot survey had a 1/8 chance of being selected for the pilot survey and a 3/8's chance of being selected for the main survey, for a total probability of selection of $1/8 + (7/8)(3/8) = 29/64 = .453$. Minority high school ineligibles whose names and addresses were not received until after the sample for the pilot survey had been drawn had a chance of only $3/8 = .375$ of selection. For the two groups combined, the mean expected selection probability is .445.

SUMMARY OF MATCHES AND NONMINORITY ACROSS THE NAME AND ADDRESS, UC ELIGIBILITY AND CSUC ELIGIBILITY TAPES

[NOTE: Each row shows the number of matches of each type. Cases with unique serial numbers are indicated by U. Cases in which a ghost record replaced a set of duplicate identification numbers on the same tape are indicated by G. Missing records on a tape are indicated by M.]

Name & Address Tape	UC Eligibility Tape	CSUC Eligibility Tape	Number of Cases
U	U	U	8,451
U	G	U	40
U	M	U	208
U	U	G	128
U	U	M	258
U	G	G	12
U	M	G	10
U	G	M	111
G	U	U	25
G	G	U	7
G	M	U	3
G	U	G	9
G	U	M	1
G	G	G	69
M	U	U	487
M	G	U	1
M	M	U	204
M	U	G	33
M	U	M	131
M	G	G	3
M	M	G	2
M	G	M	1
		TOTAL	10,198

Appendix B

Followup Methods and Outcomes

This appendix describes the survey followup methods employed in the pilot and main surveys after their standard mailings had been completed. The purposes of these additional or "heroic" followups were to further encourage response and to gain additional information about those difficult to reach or reluctant to reply.*

1. Pilot Survey Procedures

As more fully explained in the main body of this report, the basic field work procedures of the Pilot Survey consisted of an initial questionnaire mailing to each sampled graduate followed by a reminder letter and second questionnaire mailing to those who had not replied. As a result of these standard procedures, 524 questionnaires were completed, about 54 percent of the pilot sample of 968 graduates. Two graduates refused to participate, one returned an unusable questionnaire, and 11 were found to be out of the population, leaving 430 who were unlocatable by standard methods or who had not replied.

Four different followup procedures were tried with different sets of pilot survey nonrespondents to identify procedures most likely to be effective for the main survey. The nonrespondents were first divided into two main groups: those whose questionnaires had been returned by the Post Office as undeliverable (the unlocatables); and those who apparently still resided at the same address but who had chosen not to reply (the uncooperatives).

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*The term "heroic" is employed here to convey special efforts going beyond standard or normally expected procedures, especially those entailing unusual costs, as in "heroic" medical procedures employed to maintain life by unusual or costly efforts beyond those required of standard medical practice.

Voter registration tracing. -- The first followup procedure employed was voter registration tracing. Since time and cost constraints precluded a search of voter registration lists in each of California's 58 counties, this procedure was limited to unlocatables whose last known address was in Alameda, Contra Costa, Los Angeles, Orange, San Mateo, and San Francisco Counties. Voter registration lists in each of these counties were searched to locate a new address for the graduate or for another person with the same last name previously residing at the same former address. New addresses were found for about a third of the 95 unlocatables included in the search. New questionnaire mailings to these new addresses yielded a total of 9 completed questionnaires. This was the least successful of the four followup methods.

Reverse directory phoning. -- The next followup procedure employed was an attempt to telephone the remaining unlocatables and a sample of uncooperatives. Publically available reverse directories, such as the Polk City Directories, were searched by name and address to find a telephone number for each graduate or his or her family. The names and telephones of close neighbors also were noted for additional phone calls to aid in locating those who had moved. Local directory assistance operators also were called to learn telephone numbers of those who were not listed in reverse directories or who had moved or changed their number. When the proper household was reached, the graduate was asked to return the questionnaire he or she had previously received, or a new copy was mailed to the new address. Of the 135 cases attempted by these methods, 37 eventually returned a completed questionnaire. The procedure had the added benefit of identifying additional persons who had not graduated from high school between the required dates or who had permanently left the state.

Special delivery mailing. -- One hundred uncooperatives were mailed another appeal letter, questionnaire, and return envelope by special delivery mail. This more expensive form of mailing was chosen to attract greater attention and encourage response. Completed questionnaires were received from 26 graduates.

Certified mailing. -- One hundred uncooperatives were mailed the same materials by certified mail, which requires a signature for receipt and, therefore, gains even greater attention by the recipient and by Post Office employees. If certified mail is not deliverable or accepted, Post Office staff are instructed to send notification of this outcome to the sender. Completed questionnaires were received from 36 graduates receiving materials by certified mail. As shown in Table B1, this was the most effective of the four followup procedures in prompting completed questionnaires.

2. Main Survey Procedures

Based on experiences of the pilot survey, certified mail was added as a standard step in the main survey. The standard mailings of the main survey, therefore, consisted of an initial mailing, a reminder letter, a second full mailing, and certified mailing to those not replying to the previous steps. As a result of these efforts, 4,028 completed questionnaires were received from the main survey total sample of 6,115. The main survey nonrespondents were again divided into two main groups: the unlocatables and the uncooperatives. One additional followup procedure was attempted with each group.

Department of Motor Vehicles Tracing. -- The names and addresses of 832 unlocatables from the main survey were submitted to the California Department of Motor Vehicles for a search of driver's license records to indentify new addresses where possible. In addition, 103 unlocatables and

TABLE B1

OUTCOMES OF SPECIAL FOLLOWUP PROCEDURES IN THE PILOT SURVEY

Outcome	Followup Method				Total
	Voter Registration Tracing	Reverse Directory Phoning	Special Delivery Mail	Certified Mail	
Total Attempted.....	95	135	100	100	430
Complete.....	9	37	26	36	108
Refused, partial questionnaire.....	-	4	3	2	9
No response.....	14	51	67	56	188
Unlocatable, no new address or phone.....	72	26	1	4	103
Out of population.....	-	17	3	2	22
Percent Complete Among:					
Total attempted.....	9%	27%	26%	36%	25%
Not out of population.....	9%	31%	27%	37%	26%

30 cases of ambiguous locatability from the pilot survey were included in this process. Under California law, each licensed driver is required to report address changes to the Department of Motor Vehicles within three months of moving, although in many cases this is not done or the information is not processed.

To locate a record in the DMV files, exact birthdate is usually required in addition to the full name. Since exact birthdate was not directly requested of the high schools, it was not available for most graduates. The date of birth was legible on about a third of the transcripts, and when available was added to the information submitted to the Department of Motor Vehicles.

As shown in Table B2, the Department of Motor Vehicles was able to supply new addresses for about half the 965 unlocatables. An appeal letter, questionnaire, and return envelope was then mailed to the new address. The procedure yielded a total of 103 completed questionnaires, a response rate of about 11 percent of the 965 unlocatables or about 21 percent of the 484 with a new DMV supplied address.

Telephone mini-survey. -- Uncooperatives from the Main Survey were subsampled for a brief telephone survey followup intended to aid in estimating the characteristics of those who had not replied. Those reached were not asked to complete a full questionnaire. Instead, they were interviewed to obtain only key items of information, such as ethnicity, parental education, and application to any college or university. If the graduate could not be reached but another member of his or her family could provide the same information, it was obtained by proxy.

TABLE B2

OUTCOME OF DMV TRACING AND REMAILING PROCEDURES BY SAMPLING STRATUM

Outcome	Pilot Survey	Main Survey				Total
		UC Eligib.	CSUC-Only Eligible	Minor. H.S. Ineligible	Other Inelig.	
Total attempted.....	133	122	211	187	312	965
Complete.....	7	31	36	6	23	103
Refused, incomplete, no response.....	29	35	51	37	86	238
Post Office return, unlocatable.....	6	7	11	8	17	49
Out of population.....	-	1	1	-	1	3
No new address available from DMV.....	91	48	112	136	185	481
Percent Complete Among:						
Total attempted.....	5%	25%	17%	3%	7%	11%
Not out of population.	5%	26%	17%	3%	7%	11%
New address found.....	17%	42%	36%	12%	18%	21%
Percent new addresses supplied by DMV.....	32%	61%	47%	27%	41%	50%

The subsample consisted of all UC eligible uncooperatives, half the CSUC-only uncooperatives, all ineligible uncooperatives who had attended a minority high school, and one-third of all remaining ineligible uncooperatives. Graduates who had explicitly refused to participate in the study or who had returned partially completed questionnaires were not included in the subsample.

Telephone numbers were obtainable from standard telephone directories, reverse telephone directories, or local directory assistance for 188 graduates, or about 45 percent of the total subsample of 414. Interviews or proxy interviews were completed for 156 graduates, or about 83 percent of those for which telephone numbers were obtained. An additional 6 sample persons were found not to have graduated between the required dates or to have moved permanently from California. Outcomes are shown by eligibility status in Table B3.

3. Evaluation and Recommendations

The followup procedures were not notably successful in achieving their objectives. The DMV tracing was undertaken primarily to find unlocatables and obtain usable questionnaires from them, but completed questionnaires were received only from 11 percent of the total cases submitted to this treatment. The telephone mini-survey was conducted primarily to further identify the characteristics of the uncooperatives, but the interviewed samples of the mini-survey were too small, and apparently too biased, to provide much useful information about the uncooperatives. Graduates with obtainable telephone numbers appear to have been disproportionately those from more affluent homes and were, therefore, unrepresentative of uncooperatives in general.

TABLE B3

OUTCOME TELEPHONE FOLLOWUP PROCEDURES WITH SUBSAMPLES OF NONRESPONDENTS TO THE MAIN SURVEY

Outcome	UC Eligible	CSUC only Eligible	Min. H.S. Ineligible	Other Ineligible	Total
Total attempted.....	73	84	164	93	414
Complete.....	35	41	46	34	156
Refused, incomplete..	5	5	8	8	26
Out of population....	-	1	4	1	6
Phone number unknown.	33	37	106	50	226
Percent Complete Among:					
Total attempted.....	48%	49%	28%	37%	38%
Phone number found...	88%	87%	79%	79%	83%
Percent of phone numbers found.....	55%	56%	35%	46%	45%

In addition, as shown in Tables B2 and B3, both followup methods were more successful in reaching the relatively uncommon UC and CSUC eligible nonrespondents than the more common ineligible nonrespondents. For example, DMV tracing obtained completed questionnaires from 25 percent of the unlocatable UC eligibles but only 3 percent of unlocatable ineligibles from minority high schools. Similarly, the telephone mini-survey completed interviews with 49 percent of the uncooperative UC eligibles but only 28 percent of the uncooperative ineligibles from minority high schools. In short, both followup methods lent addded support to those parts of the total sample which already had a high return rate while providing little improvement to those parts of the sample with lower response rates.

Both followup procedures could be made more effective if they were undertaken closer to the time of high school graduation and if additional identifying information, such as exact birthdate, parent's or guardian's full name, and telephone number, were obtained for each sampled graduate when selected. For example, if exact birthdate were available for each graduate for DMV tracing and if those with new DMV-supplied addresses received a full schedule of mailings, the effectiveness of this procedure might be at least doubled.

Telephone follow-ups seem even more promising if the telephone number of each sampled graduate can be obtained from his or her high school when selected. As shown in Table B3, telephone interviews were completed at fully 83 percent of the households for which a telephone number could be found. Moreover, at least among graduates with a known telephone number, this is one followup technique which was almost as successful with ineligible

as with eligible graduates. A full schedule of mailings followed by a telephone canvass of those not replying by mail might provide high response rates both for eligible and ineligible graduates.

Appendix C

Weighting Procedures

This appendix describes the weighting procedures of the Expanded Eligibility Survey. The product of these steps was a set of noninteger case weights entered on the data records for returned questionnaires. Information obtained in the telephone mini-survey was not included in the weighting process nor entered in the final study data tape.

As explained in the main body of the report, the weighting procedures had several objectives:

1. To compensate for the subsampling of nonminority high school ineligibles in the main survey.

2. To compensate for the differential return rates by eligibility stratum, sex and grade point averages.

3. To provide a convenient weighted total of 10,000 to facilitate percentaging while approximating the sample size of the CPEC eligibility survey.

4. To adjust the Expanded Eligibility Survey results to the official UC and CSUC eligibility rates reported by the CPEC Eligibility Study for California as a whole and for six county groups within the state.

5. To approximate in the weighted results of the Expanded Eligibility Survey the ethnic composition of public high school seniors reported by the California Department of Education's 1973 Racial Census.

Two general comments on these objectives may be in order. First, no attempt was made to weight the Expanded Eligibility Survey results to population totals, that is, to the total of approximately 295,000 1974-75 public high school graduates. Very approximate estimated population totals

may be obtained by multiplying weighted totals from the study data tape by 29.5.

Second, the objectives of the weighting procedures were not all set forth at the beginning of processing. Instead, new specific objectives were formulated during the course of the work as deficiencies were found in estimates produced with the interim weights. The analysis and weighting proceeded through five main steps.

1. Initial Nonresponse Adjustments

Nonresponse adjustments are intended to partially compensate for different rates of nonresponse in different parts of the sample. The Expanded Eligibility Survey had one important aid to carry out this process. A few key items of information were known about each sampled graduate, whether he or she completed a questionnaire or not. With relatively few exceptions, records from the CPEC Eligibility Survey provided information on each graduate's sex, eligibility status, grade point average, and county of graduation.

As shown in Table 4 of the main body of the report, questionnaire response rates varied greatly by eligibility stratum. A more detailed analysis found that response also varied by grade point average, and slightly by sex, even among graduates in the same eligibility status. As a first step in the weighting process, the sample was post-stratified by wave (pilot or main survey), eligibility stratum, sex, and grade point average. Completed questionnaires in each individual stratum were then case weighted by the reciprocal of the response rate in that stratum. The weighting factors are shown in Table C1. For example, the main survey sample included 139 UC eligible males with grade point averages of 3.19 or

less. Of these, 107 returned usable questionnaires, for a response rate of 107/139 = .770. The 107 responding graduates in this cell, therefore, were each given a weight of 139/107 = 1.299 to bring their weighted total back to 139.

When these initial nonresponse adjustments were undertaken, it was observed that response also varied by region of the state, especially in the lower response rate from Los Angeles County. However, it was felt that nonresponse weighting by eligibility stratum, sex, and grade point average would be sufficient, and geography was not included among the nonresponse weighting factors.

2. Adjustment for the Subsampling of Nonminority High School Ineligibles

The second step was to adjust for the subsampling of ineligibles who had not attended a high school in which 40 percent or more of the students were non-Asian minorities. Each graduate in this stratum was given a weighting factor of 1/.445 = 2.247 which was multiplied by his or her nonresponse weight. Since all other graduates selected from available and usable cases in the CPEC sample were chosen with probability 1.000, their corresponding weighting factor was 1/1 = 1.000.

3. Adjustment to Official CPEC Eligibility Rates and a Weighted Total of 10,000

For the above steps, the cases were retained in their preliminary eligibility strata used in sampling. At the end of step 2, therefore, the weighted sample totals approximately equalled the "total available sample" by preliminary eligibility status shown in the first row of Table 2 in the main body of the report with a grand weighted total of 8,667.

TABLE C1

INITIAL NONRESPONSE ADJUSTMENT FACTORS

Eligibility Stratum	Sex	Wave	Grade Point Average				Missing Data
			0-1.99	2.00-2.49	2.50-3.19	3.20-4.00	
UC Eligibles	Male	Pilot	a	a	1.067	1.109	1.000
		Main	a	a	1.299	1.203	a
	Female	Pilot	a	a	1.429	1.138	a
		Main	a	a	1.241	1.139	a
Other CSUC Eligible	Male	Pilot	a	a	1.290	1.323	a
		Main	a	a	1.412	1.341	a
	Female	Pilot	a	a	1.273	1.306	1.000
		Main	a	a	1.357	1.308	a
Minority High School Ineligibles	Male	Pilot	5.119	1.740	1.920	a	b
		Main	2.622	2.068	1.679	a	a
	Female	Pilot	3.500	2.000	1.571	a	a
		Main	2.135	1.875	1.978	a	a
Other Ineligibles	Male	Pilot	2.895	1.707	1.625	a	2.500
		Main	2.352	2.031	1.585	a	a
	Female	Pilot	1.750	1.686	1.591	a	1.000
		Main	2.200	1.808	1.502	a	a

[a]No cases.

[b]Single non-response case distributed proportionally to the 3 GPA groups.

The next step was to adjust the results to a total weighted sample of 10,000 including 1,484 weighted UC eligible cases and 2,012 weighted CSUC-only eligible cases to reproduce the CPEC estimates of 14.84 percent eligible for UC and 34.96 percent eligible for CSUC. Two technical problems were encountered in carrying out this otherwise trivial step.

First, the CPEC Eligibility Study did not present separate results for minority high school and other ineligibles, since this distinction was introduced only in sampling for the Expanded Eligibility Survey. It was, therefore, necessary to partition the weighted target of 10,000 - 3,496 = 6,504 ineligibles into two parts. For this purpose, the relative proportions of minority and nonminority ineligible high school graduates in the Expanded Eligibility Survey were not employed, since it was feared they were affected by problems in matching between the three sampling tapes. Instead, the division was based on 9,984 apparently real matching and nonmatching cases in the merged master tape. This suggested a weighted total of 952 minority high school ineligibles and 5,552 nonminority high school ineligibles in a weighted total of 10,000 graduates.

Second, in selecting the Expanded Eligibility sample, graduates with borderline UC eligibility were included in the preliminary UC eligible stratum. These consisted of graduates with a grade point average between 3.00 and 3.09, as calculated by UC admissions procedures, and no subject deficiencies but for whom either SAT or CEEB college aptitude tests were missing and presumably had not been taken. To be UC eligible, such students would require a total score of 2,500 on the SAT and three CEEB tests. There was no sure method of determining these students' UC eligibility.

This problem was recognized long before the completion of the CPEC Eligibility Study, and an agreement was reached between CPEC and the University of California that half these students would be considered eligible and half ineligible for the University based on the University's prior admissions experience that about half the applicants with grade point averages in this range who took the required tests were found to be UC eligible. Thus, it was unnecessary for the University or CPEC to assign these borderline graduates individual UC eligibility statuses. Instead it was only necessary to be able to count their numbers and add half to the eligible and half to the ineligible to estimate the UC eligibility rate.*

This procedure was not possible for the Expanded Eligibility Survey since an eligibility status was required for each case. The 105 borderline cases might have been randomly divided into two approximately equal sets and half arbitrarily called UC eligible and half UC ineligible. Instead, they were more thoroughly examined. First, it was observed that 11 of these cases were classified ineligible for CSUC, and on these grounds they were ruled UC ineligible as well. Seocnd, all of the remaining 94 were found to have either an SAT or CEEB score (although not both), and an analysis of nonborderline graduates who had taken both tests showed that the combined scores of these tests could be well predicted by either. The correlation between the SAT score and the combined SAT-CEEB score was .89, while

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*The UC tape contained 113 cases in this ambiguous status. Of these, 105 had matching unique identification numbers both on this tape and on the name and address tape and were, therefore, usable for the Expanded Eligibility Survey. If as agreed, half were counted UC eligible and half UC ineligible in the CPEC estimates, one would expect to find at least 56 graduates with GPA's between 3.00 and 3.09 classified UC eligible in the final report of the CPEC Eligibility Study. On page 23 of the CPEC Report, only 9 are shown. It is unclear whether the remainder were classified eligible under an incorrect GPA range, classified ineligible, or omitted from the estimates.

the correlation between the CEEB score and the combined SAT-CEEB score was .96. A combined SAT-CEEB score was, therefore, estimated for each borderline graduate, and those with estimated scores below 2,500 were classified UC ineligible. By these procedures, only 27 of the remaining 94 borderline cases were placed in the final UC eligible stratum while the remainder were reclassified CSUC-only eligible.

When the reclassification of borderline cases was complete, a new weight variable was constructed by multiplying each sample case's step 2 weight value by a multiplier appropriate to its revised eligibility group to produce the desired weighted totals of 1,484 UC eligibles, 2,012 other CSUC eligibles, 952 minority high school ineligibles, and 5,552 other ineligibles.

4. Evaluation of Interim Weights

A series of weighted tabulations were prepared with the step 3 weights to identify residual problems with the resulting estimates. Special attention was paid to the estimated ethnic distribution of all graduates when compared with other sources of information on the ethnic composition of public high school seniors.

As shown in Table C2, the step 2 weights estimated a slightly higher percentage of Asian graduates than the 1970 U.S. Census or the 1973 Department of Education Racial Census, although this difference could be partially attributable to continuing Asian immigration or other trends. The step 3 weights estimated Spanish heritage graduates at a slightly higher percent than the Racial Census although below 1970 Census figures. In this case, the discrepancies could be largely the result of differing definitions of this ethnic group. The percentage of Black graduates

TABLE C2

SOME INDICATORS OF THE ETHNIC IDENTITY OF
1974-5 CALIFORNIA PUBLIC HIGH SCHOOL GRADUATES

Source	Percent				Base of Estimate
	Black	Asian	Other Races[3]	Spanish	
1. Step 3 weights	4.65	4.08[1]	dna	13.36[1]	4,131
Calif. State Dept. of Education[2]					
2. Grade 9 enrollment (10/1/73)	9.44	2.80	dna	15.98	357,538
3. Grade 12 enrollment (10/1/73)	7.86	3.13	dna	12.72	281,721
1970 U.S. Census (California)					
4. Public high school enrollment (4 years)	8.19		3.63	17.10[4]	200,167
5. All high school enrollment (4 yrs)	7.96		3.57	17.26[4]	215,427
6. All high school grade 9 enrollment	8.38		3.58	18.36[4]	56,879
7. All high school grade 12 enrollment	7.71		3.77	15.95[4]	50,210
8. 1st estimate of public grade 12 enrollment (lines 4*7/5)	7.93		3.83	15.80[4]	
9. Modified estimate of public grade 12 enrollment	7.93	2.66[5]		15.59[6]	

[1]Spanish here includes Chicano (9.96%), Latino (2.35%), and Filipino (1.05%). Asian includes Chinese (1.43%), Japanese (2.05%), and other non-Filipino Asian (0.6%). All figures based on self-identification.

[2]Racial and Ethnic Distribution of Pupils and Staff in California Public Schools, Fall 1973, California State Department of Education, Bureau of Intergroup Relations, 9/1/74. Report based on counts submitted by each California School District. Report uses the term "Spanish-surnamed." It contains no other information on the method of assignment to ethnic category. Note that grade 12 percents do not pertain to the time of graduation. One would expect further drift in the percents during the interviewing time period.

[3]This Census category = Total-White-Black. In California, Asians constituted 87% of 15-19 years olds in the "other races" group. To approximate percent Asian, subtract 0.5 from percent "other races." One-fifth of these Asians were Filipino.

[4]This is the Census "Spanish language or surname" category. This category includes some of the separately counted Blacks and "other races" (especially Filipino).

[5]Adjusted in accord with footnote 3.

[6]Reduced from 15.80 as a correction for the fact that in the total California

estimated by the step 3 weights, however, was substantially below that available from other sources and seemed clearly in error.

The weighting steps were reviewed in an attempt to identify procedures (or omissions) which could have contributed to this discrepancy. One possibility was the failure to take the known variations in response rate by county into account. In particular, Los Angeles County was underrepresented in the step 3 weighted estimates, and this county was known to contain more than half the Black public school children in the State. At the same time, predominantly white nonmetropolitan areas were somewhat overrepresented in the weighted figures.

5. Geographic Adjustments

For the geographic adjustments, the state was divided into six main regions as follows:

(1) Los Angeles County

(2) San Francisco Bay Area (Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara Counties)

(3) Orange and San Diego Counties

(4) Remaining southern California metropolitan counties (Kern, Riverside, San Bernardino, Santa Barbara, and Ventura Counties)

(5) Remaining northern California metropolitan counties (Fresno, Monterey, Napa, Placer, Sacramento, San Joaquin, Solano, and Yolo Counties)

(6) Nonmetropolitan counties (the remaining 36 counties).

Metropolitan counties were defined as those classified as Standard Metropolitan Statistical Areas (SMSA's) in the 1970 U.S. Census.

A two-step adjustment procedure was employed. First, the step 2 weights were ratio adjusted to sex-region targets without regard to regional eligibility

distributions. Second, a final adjustment was made to reproduce the regional and statewide eligibility distributions reported by the CPEC Eligibility Study within a weighted sample total of 10,000 graduates.

The sex-region targets were constructed from two sources. The proportional distribution of total graduates by region was taken from MISSION, Evaluation of Effectiveness Project, "Percents of High School Graduates Enrolling in the Public Segments of California Postsecondary Education and Percent Eligible to Enroll as Freshman, by County." The figures were based on previously unpublished tabulations of the CPEC High School Eligibility Study. The same source was employed for establishing target eligibility distributions within regions.

The above source did not include tabulations by sex. To develop sex-region targets it was necessary to estimate the proportions of men and women graduates in each region from other sources. For this purpose all apparently real 9,984 records in Merged Tape 2 containing a sex code were used. The proportions of men and women in each region were determined for each region and multiplied by the regional target proportion to provide sex-region target proportions. The adjustment factors shown in Table C3 were then calculated by dividing each sex-region target proportion by the corresponding step 2 weighted proportion for that sex-region combination. The step 2 weights were then multiplied by those adjustment factors and by a constant of 1.143 to raise their weighted total of 10,000.

These interim geographic weights were next used to prepare a cross-tabulation of eligibility status by region, employing the revised eligibility status described in the step 3 weights. Each region-eligibility status cell was then ratio adjusted to the check-totals provided by the report cited above. These final adjustment factors are shown in Table C4.

TABLE C3

Ratios for Adjusting the Non-Response Weighted Sample to the Population, County Group by Sex

County Group	Sex		Total
	Male	Female	
Los Angeles	1.1427	1.0527	1.0937
San Francisco Bay	.9936	1.1020	1.0468
Orange-San Diego	.9689	.8813	.9221
Other S. Calif SMSA	.9495	.9578	.9537
Other N. Calif SMSA	.9569	.9999	.9784
Non-SMSA	.8519	.9015	.8774
TOTAL	1.0031	.9968	1.0000

TABLE C4

Ratios for Adjusting County Group Eligibility Rates in the Weighted Sample to Official Figures

County Group	Eligibility Class		
	Eligible		Ineligible
	UC	CSUC only	
Los Angeles	.9281	.9470	1.0369
San Francisco Bay	.8995	.9965	1.0322
Orange-San Diego	.9863	.9906	1.0064
Other S. Calif SMSA	1.0000	1.0358	.9891
Other N. Calif SMSA	.8440	1.0082	1.0288
Non-SMSA	1.1347	.9392	1.0038

6. Re-evaluation of the Weights

As shown in Table D3 of the following appendix, the geographic adjustments increased the estimated proportions of Black and Spanish heritage graduates only slightly. For example, the percent of Black graduates was raised from 4.6 to 5.1 percent. However, further attempts to remove the apparent underrepresentation of Black graduates through modifications of the general weighting scheme appeared unpromising. No additional variables were available for all graduates which could be added to the weighting procedures, and further adjustments might undo the effects of earlier weighting steps. A global, brute force ratio-adjustment by the presumed ethnic distribution of all graduates would disturb estimates of the ethnic composition of the UC and CSUC eligibility pools which other sources of information suggested were approximately correct.

The decision was, therefore, made to end the general weighting process with the geographically adjusted weights and accept the apparent underrepresentation of Black graduates as a known bias of the survey. Possible explanations of this bias have previously been suggested in Section 7 of the main body of the report.

Appendix D

Estimating Eligibility by Ethnicity

This appendix describes the preparation of the "adjusted, weighted" estimates for Tables 6 and 7 of the main body of the report which cross-tabulate eligibility by gross ethnic categories. To construct these tables, two sources of information were employed beyond the standard weighted estimates: (1) analysis of the surnames of nonrespondents; and (2) projections based on trends among respondents to successive mailings.

1. Analysis of Surnames

To identify ethnic biases in nonresponse, the surnames of all 1,828 sampled graduates who responded neither by questionnaire nor to the telephone mini-survey were individually examined. Graduates of Spanish heritage were identified by a list of surnames employed in the U.S. Census Bureau's Spanish surname classification. Asian-American graduates were identified by one of the author's unaided recognition of Asian names. Ambiguous names were classified non-Asian. This information was added to ethnic self-designations in returned questionnaires and responses to the telephone mini-survey to estimate the percent Spanish and percent Asian among sampled graduates in each eligibility status.*

A Spanish adjustment factor (and corresponding Asian adjustment factor) was then calculated for each eligibility status as follows:

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*The revised eligibility classification was employed, and as usual ineligible graduates from nonminority high schools were upweighted to adjust for their subsampling.

$$\text{Adjustment factor} = \frac{\text{Percent Spanish among all sampled graduates}}{\text{Percent Spanish among questionnaire respondents}}$$

These adjustment factors, which are shown in Table D1, were then multiplied by the corresponding cells in a cross-tabulation of eligibility by ethnicity prepared with the geographically adjusted weights. For example, the geographically adjusted weights estimated 1,112 Spanish heritage ineligibles in a weighted total sample of 10,000. When multiplied by the adjustment factor of 0.978 for Spanish heritage ineligibles, this was decreased to 1,088.

2. Projection Methods

The same procedures could not be employed for Black graduates since Black surnames are indistinguishable from those of non-Spanish whites. Instead, a projection method was employed which relies on the extrapolation of ethnic trends in responses to successive questionnaire mailings.

The general concept underlying this procedure is a simple one. Suppose a questionnaire survey employed an initial mailing with two successive followup mailings to those who had not yet replied and the percent of Black respondents to the three mailings is found to be 2 percent, 4 percent, and 6 percent, respectively. This suggests that more effort is required to elicit replies from Black respondents, and that consequently Blacks may comprise a disproportionate share of the remaining nonrespondents. With simplifying assumptions, it also is possible to estimate the proportion of Black's in the total sample by extrapolation.

A method of preparing such estimates by linear regression has been proposed by F. L. Filion.* Let i equal the mailing wave; let Y_i be a

*F. L. Filion, "Estimating Bias Due to Nonresponse in Mail Surveys," Public Opinion Quarterly, 39 (Winter 1975-76), pp. 482-492.

percentage of interest (such as the percent Black) among all persons responding through the ith wave; and let x_i be the total response rate through the ith wave. If there are at least three waves, the linear regression equation:

$$Y_i = m\, x_i + b$$

may be solved for the regression parameters m and b, which represent the slope and Y intercept. Then, an estimated Y for the total sample may be obtained by setting x_i = 100 percent to represent 100 percent response.

The application of this procedure to the Expanded Eligibility Survey required a preliminary assessment of the appropriate waves to employ. Initially, it appeared that six waves might be applicable, as follows:

1. Initial mailing
2. Reminder letter
3. Second standard mailing
4. Certified mailing or corresponding pilot survey followup
5. DMV tracing and mailing
6. Telephone mini-survey

However, it proved necessary to combine some waves and discard one altogether. The reminder letter was eliminated as a separate wave when it was found more successsful with women than men graduates. More consistent trends occurred when reminder letter respondents were combined with those answering the second standard mailing. Respondents reached through DMV addresses typically received only one mailing, and generally resembled respondents to the initial mailing with which they were, therefore, combined. Respondents to the telephone mini-survey were too few in number and appeared so atypical that the mini-survey was dropped from the analysis. Thus, the analyses were based

TABLE D1

SPANISH HERITAGE AND ASIAN-AMERICAN
ADJUSTMENTS BASED ON EXAMINATION OF SURNAMES

Eligibility Status	Geographically Adjusted Estimates		Adjustment Factor		Revised Estimate	
	Spanish Heritage	Asian American	Spanish Heritage	Asian American	Spanish Heritage	Asian American
UC eligible	67	150	.979	.935	65.6	140.2
Other CSUC eligible	199	90	1.007	.883	200.4	79.4
Ineligible	1112	175	.978	.799	1087.7	139.8
TOTAL	1378	415			1353.7	359.4

on only three waves: (1) the initial mailing combined with the DMV address respondents; (2) the combined results of the reminder letter and second standard mailing; and (3) the certified mailing and corresponding pilot survey followup procedures.

A variety of regression analyses were completed with each of the major ethnic categories shown in Table D1 and for further ethnic subdivisions. Each analysis was undertaken separately by major eligibility status: UC eligible; CSUC-only eligible; and ineligible. In addition, the procedure was employed for men and women separately as well as for both sexes combined and with minority and nonminority high school ineligibles treated separately and combined. Nonlinear regression also was explored by taking the logarithms of variables entered in the regression equations and the antilogarithm of the result.

In general, the results appeared to be unstable and less than wholly satisfactory.* Some typical results aggregating separate analyses by sex and the four-way eligibility classification are shown in the last column of Table D3. In part, the less than satisfactory outcomes of these analyses prompted the examination of nonrespondent surnames described above.

Nevertheless, since all the regression projections indicated that the proportion of Black graduates were larger than estimated by any of the weighting procedures, it was unreasonable to entirely ignore the

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*The instability and less than satisfactory performance of the regression extrapolations may have been attributable to a variety of factors, including: (1) the small number of usable waves which could be employed in the regression estimates; (2) the relatively low overall response rates among ineligibles; and (3) the relatively small numbers of respondents replying to individual waves when these respondents were separately analyzed by sex and eligibility class. In addition, the regression method assumes that all respondents are in theory reachable, while the substantial number of unlocatables in the Expanded Eligibility Survey would appear to violate this assumption.

projection method in constructing the final adjusted weighted estimates of ethnic proportions. The procedure used is summarized in Table D2. The projected number of Black graduates and of "Anglo and other" graduates was first obtained for each eligibility status by the linear regression method applied to the geographically adjusted estimates. Then, the ratio of Black to Black, Anglo, and other graduates was computed for each eligibility status. The number of Black graduates in each eligibility status was then estimated by multiplying this projection ratio by the total number of estimated graduates after Spanish and Asian graduates from Table D1 had been subtracted. The number of "Anglo and other" graduates was then obtained by subtraction from the total.

Table D3 presents a summary of the statewide ethnic distribution of graduates estimated step 3 weights, the geographically adjusted weights, and the "adjusted, weighted estimates." In general, the "adjusted, weighted estimates" more closely approximate the criterion measures than either the step 3 or geographically adjusted weights.

TABLE D2

BLACK & "ANGLO AND OTHER" ALLOCATIONS BASED ON
RATIOS OF PROJECTIONS FROM GEOGRAPHICALLY WEIGHTED ESTIMATES

Item	UC Eligible	Other CSUC Eligible	Ineligible	Total
1. Black projections	36.7	60.4	592.1	689.2
2. Anglo and Other projections	1220.9	1658.0	4301.8	7180.7
3. Allocation ratio [1/(1 + 2)]	.029	.035	.121	
4. Total cases less Spanish and Asian (from Table D1)	1278.2	1732.2	5276.5	8286.9
5. Black allocations	37.3	60.9	638.4	736.6
6. Anglo and Other allocations	1240.9	1671.3	4638.1	7550.3

TABLE D3

ETHNIC COMPOSITION OF ALL GRADUATES ESTIMATED BY FOUR PROCEDURES COMPARED WITH CRITERION MEASURES

Ethnic Group	Criterion Measures		Expanded Eligibility Survey			
	1970 Census Public High Grade 12 Enrollment[a]	1973 CDOE Racial Census Grade 12[b]	Step 3 Weights	Geographically Adjusted Weights	"Adjusted" Weighted Estimates	Filion[c] Projections
Black.....	7.9%	7.9%	4.6%	5.1%	7.4%	6.9%
Spanish heritage.....	15.6%	12.7%	13.4%	13.8%	13.5%	17.9%
Asian-American.....	2.7%	3.1%	4.1%	4.1%	3.6%	3.4%
Anglo and Other.....	73.8%	76.3%	77.9%	77.0%	75.5%	71.8%
TOTAL.....	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Weighted base of percents			10,000	10,000	10,000	10,000

[a]From line 9 of Table C2.

[b]From line 3 of Table C2.

[c]See text for expanation and source.

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